DVD-Video Player DVD763SA

DVD763SA /001 /021 /051

Service
Service
Service

Service Manual

CLASS 1
LASER PRODUCT

DVD VIDEO™

COMPACT disc DIGITAL VIDEO

COMPACT disc DIGITAL AUDIO

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Published by MW 0265 Service PaCE Printed in the Netherlands Subject to modification EN 3122 785 12310

PHILIPS

1. Technical Specifications and Connection Facilities

Specifications

PLAYBACK SYSTEM

DVD Video
SACD multi channel and SACD stereo
Video CD & SVCD
CD (CD-Recordable and CD-Rewritable)
MP3 CD

TV STANDARD (PAL/50Hz) (NTSC/60Hz)

Number of lines	625	525
Playback	Multistandard	(PAL/NTSC)

VIDEO PERFORMANCE

RGB (SCART) output	0.7 Vpp into 75 ohm
YUV output	Y: 1Vpp into 75 ohm
	Pr/Cr Pb/Cb: 0.7Vpp into 75 ohm
S-Video output	Y: 1Vpp into 75 ohm
	C: 0.3Vpp into 75 ohm
Video output	1 Vpp into 75 ohm
Black Level Shift	On/Off
Video Shift	Left/Right

AUDIO FORMAT

DSD	Multichannel and Stereo
MPEG/	Compressed Digital
Dolby Digital	16, 20, 24 bits
DTS/PCM	fs, 44.1, 48, 96 kHz
MP3	96, 112, 128, 256 kbps and
(ISO 9660)	variable bit rate fs 32, 44.1, 48kHz

Full decoding of Dolby Digital and DTS multi channel sound
Analogue Stereo Sound
Dolby Surround-compatible downmix from Dolby Digital multi-channel sound
3D Sound for virtual 5.1 channel sound on 2 speakers

SACD AUDIO PERFORMANCE

D/A Converter	DSD	
SACD	fs 2.8224MHz	DC - 100kHz
Max. output voltage (0dB)	2V rms	
Channel unbalance	<0.5 dB	
Cut-off frequency	50kHz (Front)	
	40kHz (Surround, Center, Subwoofer)	
Signal-Noise (1kHz)		105 dB
Dynamic Range (1kHz)		105 dB
Crosstalk (1kHz)		105 dB
Total Harmonic Distortion (1kHz)		97 dB

AUDIO PERFORMANCE (TYPICAL)

DA Converter	24 bits	
DVD	fs 96 kHz	4 Hz - 44 kHz
CD/Video CD	fs 44.1 kHz	4 Hz - 20 kHz
S-Video CD	fs 48 kHz	4 Hz - 22 kHz
	fs 44.1 kHz	4 Hz - 20 kHz
Signal-Noise (1kHz)		100 dB
Dynamic Range (1kHz)		100 dB
Crosstalk (1kHz)		105 dB
Total Harmonic Distortion (1kHz)		97 dB
MPEG MP3	MPEG Audio L3	

CONNECTIONS

SCART	2x Euroconnector
Y Pb/Cb Pr/Cr (480i)	Cinch 3x (green, blue, red)
S-Video Output	Mini DIN, 4 pins
Video Output	2x Cinch (yellow)
Audio L+R output	Cinch (white/red)
Digital Output	1 coaxial, 1 optical
	IEC958 for CDDA / LPCM
	IEC1937 for MPEG1/2, Dolby Digital, DTS

6 channel analog output

Audio Front L/R	Cinch (white/red)
Audio Surround L/R	Cinch (white/red)
Audio Centre	Cinch (blue)
Audio Subwoofer	Cinch (black)

CABINET

Dimensions (w x h x d)	435 x 77.5 x 303.5 mm
Weight	Approximately 3.1 Kg

POWER SUPPLY (UNIVERSAL)

Power inlet	110V-240V, 50/60Hz
Power usage	Approx. 23W
Power usage standby	< 1W

* *typical playing time for movie with 2 spoken languages and 3 subtitle languages*

Specifications subject to change without prior notice

2. Safety Instructions, Warnings and Notes

2.1 Safety Instructions

2.1.1 General Safety

Safety regulations require that during a repair:
- Connect the unit to the mains via an isolation transformer.
- Replace safety components, indicated by the symbol ▲, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:
- Route the wires/cables correctly, and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the electrical DC resistance between the mains plug and the secondary side:
  1. Unplug the mains cord, and connect a wire between the two pins of the mains plug.
  2. Set the mains switch to the 'on' position (keep the mains cord unplugged!).
  3. Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
  4. Repair or correct unit when the resistance measurement is less than 1 MΩ.
  5. Verify this, before you return the unit to the customer/ user (ref. UL-standard no. 1492).
  6. Switch the unit 'off', and remove the wire between the two pins of the mains plug.

2.1.2 Laser Safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser Device Unit

Type	:	Semiconductor laser GaAlAs
Wavelength	:	650 nm (DVD)
	:	780 nm (VCD/CD)
Output Power	:	20 mW (DVD+RW writing)
	:	0.8 mW (DVD reading)
	:	0.3 mW (VCD/CD reading)
Beam divergence	:	60 degree

Figure 2-1 Class 1 Laser Product

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

2.2 Warnings

2.2.1 General

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, symbol ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools at this same potential. Available ESD protection equipment:
  – Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
  – Wristband tester 4822 344 13999.
- Be careful during measurements in the live voltage section. The primary side of the power supply (pos. 1005), including the heatsink, carries live mains voltage when you connect the player to the mains (even when the player is 'off'!). It is possible to touch copper tracks and/or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A 'lightning stroke' and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.
- Never replace modules, or components, while the unit is 'on'.

2.2.2 Laser

- The use of optical instruments with this product, will increase eye hazard.
- Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.
- Repair handling should take place as much as possible with a disc loaded inside the player.
- Text below is placed inside the unit, on the laser cover shield:

CAUTION VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN
VARNING SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN
VAROI AVATT AESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LASER SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN
VORSICHT SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETSEN
DANGER VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM
ATTENTION RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU

Figure 2-2 Warning text

2.2.3 Notes

Dolby

Manufactered under licence from Dolby Laboratories. "Dolby", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories. Confidential Unpublished Works. ©1992-1997 Dolby Laboratories, Inc. All rights reserved.

Figure 2-3

Trusurround

TRUSURROUND, **SRS** and symbol (fig 2-4) are trademarks of SRS Labs, Inc. TRUSURROUND technology is manufactured under licence frm SRS labs, Inc.

Figure 2-4

2.3 Service Hints

2.3.1 Switched Mode Power Supply

The power supply unit has to be replaced in case of failure. The schematic provided in the manual is only for information and no service parts will be available.

2.3.2 DVD Module

This module can be repaired as follows:

1. The VAL6011/14 is a combination of loading mechanism and DVD-mechanism. Both are not repairable units and in case of failure, it has to be replaced with a new loader VAL6011/14.

   Note: When replacing with a new VAL6011/14, two solder joints have to be removed after connecting the OPU flex foil to the mono board.
   The solder joints, which shortcircuits the laser diodes to ground, are for protection against ESD. Refer to figures 2-5 and 2-6 for location of solder joints.
2. The mono board has to be repaired down to component level. Repair handling of the monoboard requires a workshop with sophisticated desoldering tools.

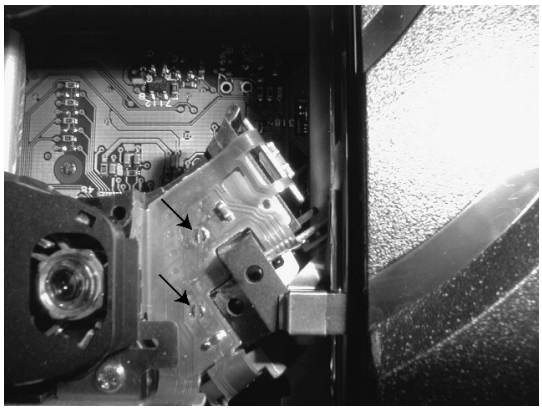

Figure 2-5 Solder joints

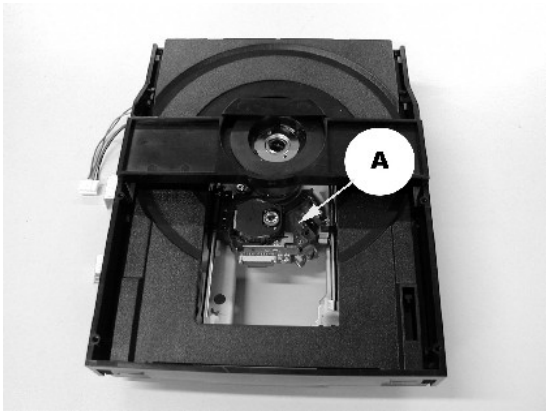

Figure 2-6 Solder joints

2.3.3 ComPair

For assistance with the repair process of the monoboard an electronic fault finding guidance has been developed. This program is called ComPair.
This ComPair program is available on CDROM.
The version of the CDROM for repair of the monoboard is V1.3 or higher and can be ordered with codenumber 4822 727 21637. This is an update CDROM, so when the ComPair CDROM is used for the first time, one has to install the ComPair Engine CDROM V1.2 first.
The V1.2 CDROM can be ordered with code number 4822 727 21634 and has to registered after instalation. The procedure for registration is explained in the help file of the program and in the CDROM booklet.
The cable to connect the monoboard with a PC can be ordered with codenumber: 3122 785 90017.
All the hardware and software requirements of the systems, necessary for working with ComPair, are described on the CDROM.

2.3.4 Service Positions

Refer to dismantling instructions for dismounting of the board. Figures 2-7 to 2-8 shows the service position that are recommended during repair of the boards.

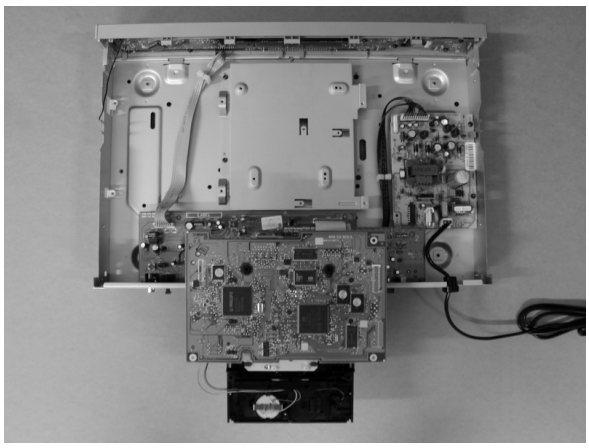

Figure 2-7 SD4.00SA_CH module

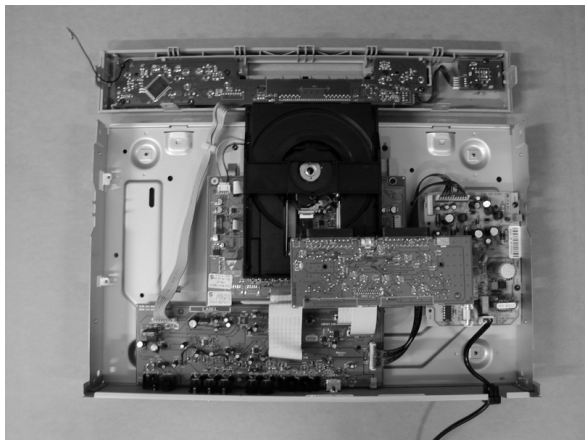

Figure 2-8 DVD763SA model

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CAUTION
VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
ADVARSEL
SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
VARNING
SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN
VARO!
AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LASER SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN
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SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETSEN
ATTENTION
RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU

General Information

The region code for this set is 2.

Since it is usual for DVD movies to be released at different times in different regions of the world, all players have region codes and discs can have an optional region code. If you load a disc of a different region code to your player, you will see the region code notice on the screen. The disc will not playback, and should be unloaded.

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"DTS" and "DTS DIGITAL SURROUND" are registered trademarks of Digital Theater Systems, Inc.

CE **This DVD/SACD player is in conformity with the EMC directive and low-voltage directive.**

For Customer Use:

Read carefully the information located at the bottom of your DVD/SACD player and enter below the Serial No. Retain this information for future reference.

Model No. DVD/SACD
Serial No. _____

Laser safety

This unit employs a laser. Due to possible eye injury, only a qualified service person should remove the cover or attempt to service this device.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

NOTE:
PICTURES SHOWN MAYBE DIFFERENT BETWEEN COUNTRIES.

LASER	
Type	Semiconductor laser GaAlAs
Wave length	650 nm (DVD)
	780 nm (VCD/CD)
Output Power	7 mW (DVD)
	10 mW (VCD/CD)
Beam divergence	60 degree

CAUTION
(WARNING LOCATION: ON THE BACKPLATE OF SET)

NEVER MAKE OR CHANGE CONNECTIONS WITH THE POWER SWITCHED ON.

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English

English

Introduction

Thank you for purchasing this Philips DVD/SACD player. This Owner's Manual explains the basic operation of this DVD/SACD player.

Environmental Information

All unnecessary packaging has been omitted. The packaging has been made easy to separate into three materials: cardboard (box), polystyrene foam (buffer) and polyethylene (bags, protective foam sheet).

Your DVD/SACD player consists of materials which can be recycled and reused if disassembled by a specialised company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

Supplied accessories

- Remote control
- Batteries (two AA size) for remote control
- Audio cable
- SCART cable
- CVBS cable
- Owner's Manual

Safety Information

- Before operating the DVD player, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) is identical with the voltage of your local power supply. If not, please consult your dealer.
  Note:
  – The typeplate is located at the bottom of the DVD player.
- Place the DVD player on a flat, hard and stable surface.
- There must be sufficient room in front of the player for the disc tray to be opened.
- In cabinet, allow about 2.5cm (1 inch) of free space all around the player for adequate ventilation.
- Do not expose your player to extreme of temperature or humidity.
- If the DVD player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the disc unit inside the DVD player. Should this occur; the DVD player would not operate normally. Leave the power on for about one hour with no disc in the DVD player until normal playback is possible.
- The mechanical parts of the set contain self-lubricating bearings and must not be oiled or lubricated.
- **When the DVD player is switched to Standby mode, it is still consuming some power. To disconnect the system from the power supply completely, remove the AC power plug from the wall socket.**

Symbols Used in this Manual

The below symbols appear in some headings and notes with the following meanings:

DVD	– Description refers to playback of DVD-video discs
VCD	– Description refers to playback of Video CDs
CD	– Description refers to playback of Audio CDs
SACD	– Description refers to playback of Super Audio CDs

Helpful Hints!
- ***Some DVD video discs require specific functions or allow only limited functions during playback.***
- ***"×" may appears on the TV screen which means that the function is not available on that specific DVD video disc.***

Reality reproduced: Super Audio CD

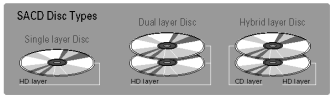
The future in digital sound reproduction is no longer limited to a closely simulating of reality. The new audio standard IS reality! The human ear is no longer capable of distinguishing audible reality from digital reproduction. At Philips the future starts today with the Super Audio Compact Disc player. This Super Audio CD player combines superior sound quality with the possibility of playing almost all existing audio and video formats with a single player.

The Super Audio standard is based on Direct Stream Digital (DSD) technology. This new direct-stream digital format comprises a 1-bit system that has a digital sampling frequency that is 64 times higher than that of conventional audio CD. The results are spectacular: a frequency response of over 50k Hz and a 120dB dynamic range over the entire audible spectrum. Mixed with as many of the original frequencies as possible, the audio information audible for human ears sounds much more natural.

The next standard: hybrid disc

The Super Audio CD is the evolution of the CD that provides ultra-high-quality sound. Additional features, including multi-channel, can be offered. On the high density (HD) Super Audio CD you may have access to separate areas, containing two-channel stereo and multi-channel.

But that is not all! The hybrid version of the SACD guarantees backward compatibility with the installed base of CD and DVD players. In addition to the HD layer, the hybrid disc contains a standard density CD layer with conventional two-channel stereo CD audio information. The two layers are read from the same side of the disc. The HD layer is read by and DVD laser. The bottom reflective layer with conventional CD sound is read by the CD laser through the second, semi-transmissive HD layer.



SACD: reality in sound...and vision

This SACD player will not only surprise you with its superior reproduction of almost all existing audio formats. Connected to your TV, your SACD player presents VCD and DVD-video information as perfect digital studio-quality images with truly 3-dimensional digital multi-channel audio.

Super Audio CD

You will recognize Super Audio CDs by the logo. There are three types of Super Audio CDs: single-layer, dual-layer and hybrid discs. Each type may contain two areas of recorded information: a High Quality Stereo area and a High Quality Multi-channel area.

– The single layer disc may contain both information areas.

– The dual layer disc may contain both information areas but a double amount of information can be stored on the disc thanks to the second layer.

– The hybrid disc may contain not only both information areas but also a second, standard CD layer, making it playable on standard CD players.

Recorded information may vary per area. This is indicated in the disc inlay. Areas can be selected separately before or during playback, while playing Super Audio CDs via the remote control or via the On-Screen Display on your TV.

SUPER AUDIO CD

Front Panel

STANDBY-ON
– to switch the player to standby mode or ON

STANDBY INDICATOR
– lights red when the player is in Standby mode

SMART PICTURE
– to access the colour settings menu bar

SOUND
– selects required sound mode
• for SACD: CD, Stereo or Multi-channel (if available)
• for DVD/VCD: Stereo, Dolby Surround-compatible, 3D sound or Multi-channel

DISPLAY
– shows the current status of the player

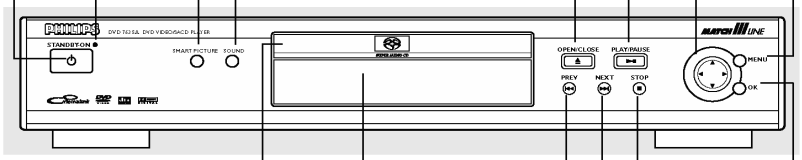
Disc Tray

MENU
– to access menu of a DVD disc

◄ ► ▲ ▼ (left/right/up/down)
– navigation keys to select an item in the

►II PLAY/PAUSE
– to start or interrupt playback

▲ OPEN/CLOSE
– to open/close the disc tray



◄◄ PREV
– goes to previous chapter or track

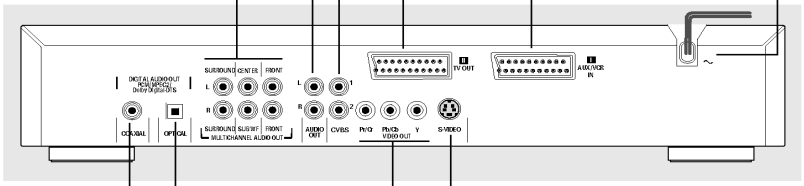
►►I NEXT
– goes to next chapter or track

■ STOP
– to stop playback

OK
– to acknowledge menu selection

Functional Overview

Rear Panel



MULTICHANNEL AUDIO OUT
(For connection to a multichannel receiver)
– center speaker, subwoofer, front and surround speakers connection

AUDIO OUT (Left/Right)
– connect to AUDIO inputs of an amplifier, receiver or stereo system

CVBS (VIDEO OUT)
– connect to CVBS Video inputs of a TV

MAINS (AC Power Cord)
– connect to a standard AC outlet

AUX/VCR IN (VIDEO OUT)
– connect to a VCR with SCART

TV OUT (VIDEO OUT)
– connect to a TV with SCART

OPTICAL (Digital audio out)
– connect to digital (optical) audio equipment

COAXIAL (Digital audio out)
– connect to AUDIO inputs of a digital (coaxial) audio equipment

Pr/Cr Pb/Cb Y VIDEO OUT
– connect to a TV with Pr/Cr Pb/Cb Y (component video) inputs

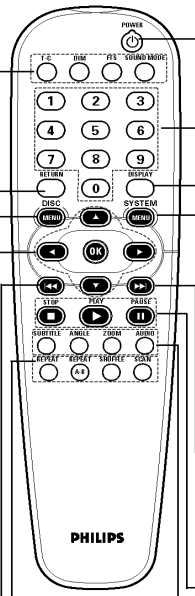
S-VIDEO OUT
– connect to a TV with S-Video inputs

Caution: Do not touch the inner pins of the jacks on the rear panel. Electrostatic discharge may cause permanent damage to the unit.

English

Functional Overview

Remote Control



T-C
– select title/chapter

DIM
– to select 3 different brightnesses for the display

FTS
– activate/deactivate Favourite Track Selection

SOUND MODE
– selects required sound mode
• for SACD: CD, Stereo or Multi-channel (if available)
• for DVD/VCD: Stereo, Dolby Surround-compatible, 3D sound or Multi-channel

RETURN
– go back to previous menu

DISC MENU
– access menu of a DVD disc

◄ ► ▲ ▼
– (left/right/up/down) select an item in the menu

OK
– acknowledge menu selection

|◄◄
– search backward* / go to a previous chapter or track

REPEAT
– repeat chapter, track, title, disc

REPEAT (A-B)
– repeat a specific segment

SHUFFLE
– play tracks in random order

SCAN
– play the first 10 seconds of each track/chapter within a disc

POWER ⏻
– switch DVD player ON or go to standby-on mode

0-9 numerical key pad
– select numbered items in a menu

DISPLAY
– activate/deactivate CD text if available on the disc (audio CDs)
– to display bit rate indicator during playback (DVD, SVCD)*

SYSTEM MENU
– access or remove player's system menu

►►|
– search forward* / next chapter or track

STOP (■)
– stop playback

PLAY (►)
– start playback

PAUSE (II)
– pause playback temporarily / frame-by-frame playback

SUBTITLE
– subtitle language selector

ANGLE
– select DVD camera angle

ZOOM
– enlarge video image

AUDIO
– audio language selector

** Press and hold key for about two seconds*

Basic Connections

- Please refer to the instruction books of your TV, VCR, Stereo System or other devices as necessary to make the best connections.
- Make one of the following connections, depending on the capabilities of your existing equipment.

The following guidelines are options for the best picture and sound quality available on your DVD/SACD player.

Picture

1 Use the CVBS Video Ouput for good picture quality.
2 Use S-Video Output for the better picture quality.
3 Use SCART or Pr/Cr Pb/Cb Y Output for best picture quality.

Note:
– RGB (on SCART) and YUV (Pr/Cr Pb/Cb Y) output signals are not available at the same time.
– To choose your preferred output connection, refer section "Personal Preferences - RGB/YUV switching".

Sound

1 Digital audio connections provide the clearest sound. Connect the DVD player's DIGITAL AUDIO OUT (either COAXIAL or OPTICAL) to your amplifier or receiver.

Note:
– Digital output is not available for SACD and MP3 discs.

2 If digital connections are not possible, connect the DVD player's LEFT/RIGHT FRONT, CENTRE, SUBWOOFER, LEFT/RIGHT SURROUND connectors to the corresponding inputs on your multi-channel audio/video receiver.
3 If both the above connections are not possible, connect the DVD player's Left and Right (white and red) AUDIO OUT to your amplifier, receiver, stereo or TV.

Warning!
– Never make or change connections with the power switched on.
– Connect the DVD/SACD player directly to your TV, instead of eg. a VCR, to avoid distortion because DVD video discs are copy protected.
– Do not connect the DVD/SACD player AUDIO OUT to the PHONO IN of your amplifier or receiver.

Connecting to a TV

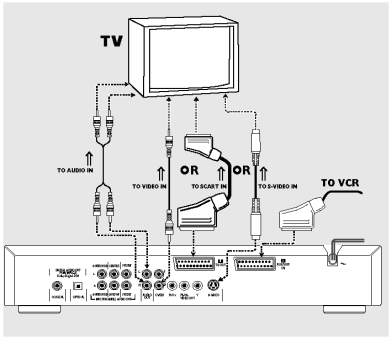
1 Connect the SCART (TV OUT) on the DVD player to the corresponding connector on the TV.

Note:
– Ensure that the "TV" indication on SCART cable is connected to the TV set and "DVD" indication on SCART cable is connected to the DVD player.

If your TV is not equipped with SCART input, you can select the following connection:

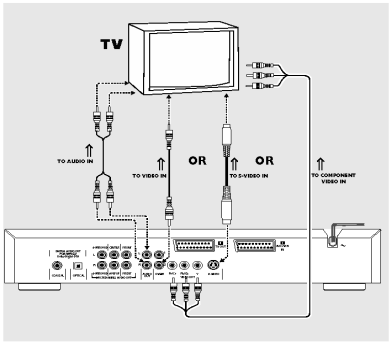
If your TV has a CVBS Video input connector,
1 Connect the CVBS VIDEO OUT on the DVD player to the CVBS VIDEO IN on the TV.
2 Connect the Left and Right AUDIO OUT on the DVD player to the Left and Right AUDIO IN on the TV.

If your TV has a S-Video input connector,
1 Connect the S-VIDEO OUT on the DVD player to the S-VIDEO IN on the TV.
2 Connect the Left and Right AUDIO OUT on the DVD player to the Left and Right AUDIO IN on the TV.



If your TV has a component video (Pr/Cr Pb/Cb Y) input connector,

1 Connect either S-Video or CVBS video out jack to TV.
2 Turn on the TV and go to Personal Preference menu *(see Personal Preference)*.
3 Change the video output from RGB (default) to YUV (Pr/Cr Pb/Cb Y).
4 Connect the Pr/Cr Pb/Cb Y VIDEO OUT jacks on the DVD player to the corresponding INPUT on the TV using an optional Pr/Cr Pb/Cb Y cable.
5 Connect the Left and Right AUDIO OUT jacks of the DVD player to the AUDIO Left/Right INPUT on the TV.



Cinemalink (on SCART)

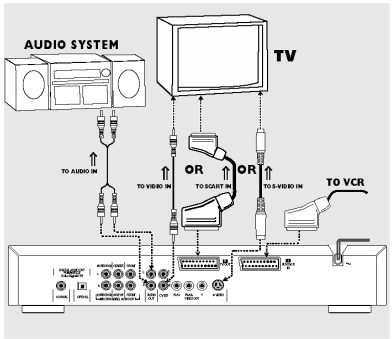
This DVD player is equipped with cinemalink feature (from Philips) which allows a more complete control of your home audio/video (AV) equipment.

Cinemalink interconnection plug & playback will enable the AV system to recognise the users intention and automatically switch the necessary controls or input source accordingly. This will reduce the necessity of having multiple control inputs for all AV equipments (eg. TV and Amplifier).

Connecting to an Audio System

1 You can also listen to the sound of audio CDs, stereo SACDs and DVD Video discs by connecting to an optional stereo system.
2 Connect the FRONT LEFT/RIGHT AUDIO OUT on the DVD player multichannel audio output to the Left and Right AUDIO IN on the stereo system.

Important:
– For the best sound quality with playback of audio CDs and stereo SACDs, always use the left and right connectors of the high-quality stereo/ Multi-channel audio output. The separate stereo output is intended only for connection to video equipment such as a TV set.

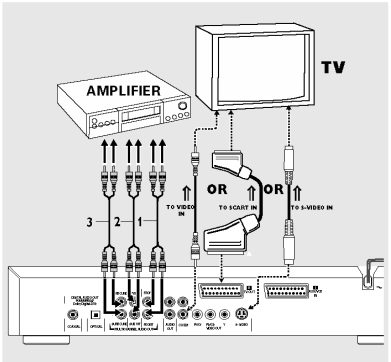


Connecting to a Multi-channel Audio/(Video) receiver with 6 connectors

This DVD/SACD player contains a multi-channel decoder. This enables playback of SACDs & DVDs recorded in Multi-channel. You only need to select Multi-channel using the Sound Mode key.

1 Connect the audio Left and Right outputs for Front speaker connection ***(1)*** to the corresponding input sockets on your receiver using the audio cable supplied.
2 Connect the audio outputs for Center speaker and Subwoofer connection ***(2)*** to the corresponding inputs on your receiver using an optional audio cable.
3 Connect the audio Left and Right outputs for Surround speaker connection ***(3)*** to the corresponding inputs on your receiver using an optional audio cable.

Note:
– If the subwoofer is equipped with its own amplifier, the Subwoofer connection should be connected directly to the subwoofer.

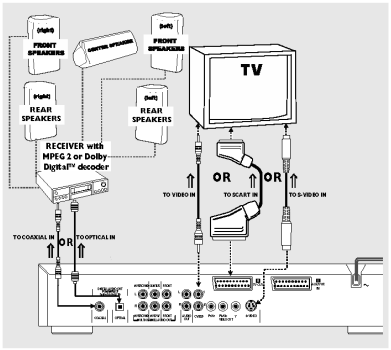


Connecting to a Digital Audio Equipment

If your receiver has an Dolby Digital, DTS or MPEG2 decoder,

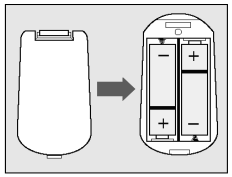
1 Connect the COAXIAL or OPTICAL DIGITAL AUDIO OUT of the DVD player to the COAXIAL or OPTICAL DIGITAL AUDIO IN on your receiver.
2 Set the DVD player's digital output to ALL *(see "Personal Preferences")*

Notes:
– SACD audio is NOT available on the Digital audio output (coaxial or optical) as per the SACD standard.
– If the audio format of the digital output does not match the capabilities of your receiver, the receiver will produce a strong, distorted sound or no sound at all.
– MP3 Audio is not available on the Digital Output.



Inserting batteries into the Remote Control

1 Open the battery cover.
2 Insert batteries (AA size) with the correct polarity as indicated by the + and – symbols inside the battery compartment.
3 Close the cover.



CAUTION!
– Remove batteries if they are exhausted or not to be used for a long time.
– Do not use old and new or different types of batteries in combination.
– Batteries contain chemical substances, so they should be disposed off properly and kept away from children.

Using the Remote Control

- Direct the remote control at the remote sensor of the DVD/SACD player.
- Do not drop the remote control.
- Do not leave the remote control near extremely hot or humid places.
- Do not spill water or put anything wet on the remote control.

Switching On

1 Connect the AC power cord to the power outlet.
2 Switch on the TV and DVD player.
3 Set the TV to the correct Video IN channel. (eg. EXT1, EXT2, AV1, AV2, AUDIO/VIDEO, etc - refer to your TV owner's manual for detail).
➜ The player display lights up and the default screen appears on the TV.
4 If you are using an external equipment (eg. audio system or receiver), turn them on and select the appropriate input source that was used to connect to the DVD/SACD player output. Refer to the equipment owner's manual for detail.

Notes:
– If you do not have a proper picture or sound, refer to 'Troubleshooting' section.

Menu Bars on TV Screen

- Operations can be carried out directly via the multiple menu bars on the TV screen.
- The following functions are available via the menu bars. Pressing SYSTEM MENU keys repeatedly will toggle through menu bar 1, menu bar 2, menu bar 3 and menu bar OFF:

Menu bar 1

From the left,
Personal Preferences ➜ Subtitle Language ➜ Audio Language ➜ Colour ➜ Sound

Menu bar 2

From the left,
Step by step playback ➜ Slow motion ➜ Fast motion ➜ Angle ➜ Zoom

Menu bar 3

From the left,
Title ➜ Chapter ➜ Time Search ➜ Favourite Track Selection (FTS) ➜ Wakeup Timer

Temporary Feedback Field Icons

These icons will appear on the top left hand corner of your TV screen.

scan	Scan	A-	Repeat A to end
repeat	Repeat All	A-B	Repeat A–B
title	Repeat Title		Angle
track	Repeat Track	locked	Child Lock On
chapter	Repeat Chapter	safe	Child Safe
shuffle	Shuffle	resume	Resume
shuffle	Shuffle Repeat		Action Prohibited

Personal Preferences

In the Personal Preferences settings menu, you can customize your player to suit your own particular requirements.

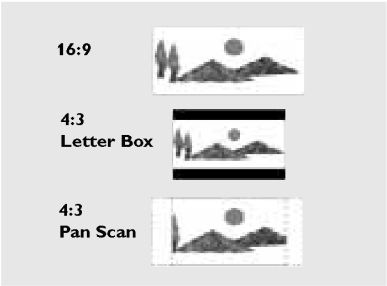
General operation:

1 Press SYSTEM MENU on the remote control.
2 The will be highlighted in the menu bar.
3 Press ▼ to activate the Personal Preferences menu.
4 Use the ◄ ► ▲ ▼ keys to toggle through the functions and select your preferred option.
5 Press OK to confirm a highlighted selection.
The following items are available:

Picture

– TV Shape

Select the aspect ratio of the TV to be connected.
16:9 ➜ when you connect a wide-screen TV to the DVD/SACD player.
4:3 LETTER BOX ➜ when you connect a normal TV to the DVD/SACD player. Displays a wide picture with black bands displayed on the upper and lower portions of the TV screen.
4:3 PAN SCAN ➜ when you connect a normal TV to the DVD/SACD player. Displays the wide picture on the whole TV screen with a portion automatically cut off.



Note:
– Pan Scan is subject to availability on the disc.

– Black level shift (NTSC output only)

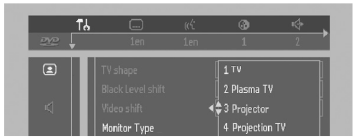
Select ON for adapting the colour dynamics to obtain richer contrasts.

– Video shift

Use this setting to personalize the position of the picture on your TV by scrolling it to the left or right.

– Monitor type selection

Allows you to select the type of display device that is connected to the DVD/SACD Video player.
For each device, a set of predefined picture settings (eg. Rich-Natural-Soft•Animation) is available. Or choose "Personal" that allows you to fine tune the brightness, saturation and contrast according to your preference.

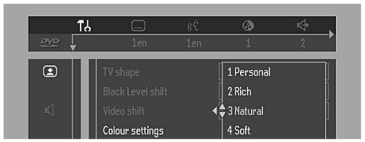


Notes:
– You can select one of the following display devices: eg. TV, Plasma TV, Video Projector or Projection TV.

– Smart Picture

● **Colour settings**

You can select one of five predefined sets of colour settings and one set (Personal) which you can define yourself.
You can also press SMART PICTURE key (on the front panel) to access the colour settings in the menubar.



● When **Personal** is selected it allows you to fine-tune saturation, brightness and contrast
● Use ▲ or ▼ keys to adjust the values of these parameters. Press OK or ◄ to exit.

– TV System (NTSC/PAL Conversion)

Allows you to select between PAL, NTSC and AUTO mode depending on your TV. Player's default setting is set to AUTO.
The conversions supported are as follows:

Disc		Output format		
		Selected mode		
Type	Format	NTSC	PAL	AUTO
DVD	NTSC	NTSC	PAL	NTSC
	PAL	Not Supported	PAL	PAL
VCD	NTSC	NTSC	PAL	NTSC
	PAL	NTSC	PAL	PAL

1 In the Personal Preferences Menu, select **TV System**.
2 Press ▲ or ▼ to select PAL, NTSC or AUTO.

Notes:
– If you have a PAL-only TV, ensure that your PAL/NTSC setting is PAL.
– AUTO can only be selected when using a TV that support both the NTSC and PAL systems.
– This setting is applicable for CVBS output on cinch and SCART only.
– Slight picture distortions may occur due to this conversion. This is normal. Thus, the AUTO format is most suitable for the best picture quality.

– RGB/YUV switching (Video Output)

This setting allows you to toggle the output of the video signal between RGB(on scart) and Y PrCr PbCb (YUV).

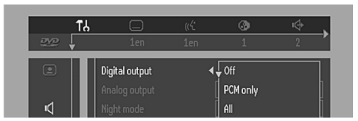
Warning:
When the player is set to Y PrCr PbCb (YUV), some TV may not properly synchronise with player on the SCART connector.

Sound

– Digital output

- Digital output selection enables you to specify the type of digital output suitable for your receiver.
- Select ALL (default setting), if you had connected your DIGITAL AUDIO OUT to a multichannel decoder/receiver.
- Select PCM only if your receiver is not capable of decoding multichannel audio.
- Select OFF to deactivate the DIGITAL AUDIO OUT.

Note:
– Digital output is not available for SACD and MP3 discs.

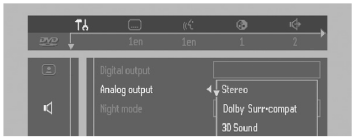


– Analogue output

Select Stereo, Dolby Surround-compatible, 3D Sound or Multi-channel. Factory setting is Multi-channel.
Multi-channel: Select this setting when using a multi-channel audio/(video) receiver with six inputs. In this mode, the player will perform DTS decoding or Dolby Digital 5.1-channel decoding when applicable, and Dolby Pro Logic decoding on DVD-Video and Video-CD discs with 2-channel sound tracks. No Dolby Pro Logic decoding is done with (Super) Audio CD discs.
Stereo: In this setting, the 5.1 audio channels are down-mixed to a stereo signal. Select this setting when connecting to a TV, stereo amplifier/ receiver, etc.

Notes:
– Multichannel output and downmixed stereo output are not available simultaneously.
– When multichannel is selected as analog output, the AUDIO OUT (Left/Right) will deliver the Centre channel data and not the downmixed Left/Right.

Dolby Surround-compatible: Select this setting when using an equipment with a Dolby Surround Pro Logic decoder. In this setting, the 5.1 audio channels (Dolby Digital, MPEG-2, DTS) are downmixed to a Dolby Surround-compatible 2-channel output.
3D-Sound: In a setup without rear speakers (analog stereo output), 3D Sound remixes the six channels of digital surround into a two-speaker output while retaining all of the original audio information. The result is the listening sensation of being surrounded by multiple speakers.
During DVD or Video-CD playback, these values can be selected directly with the 'SOUND MODE' key.



– Night Mode

When set to ON, the dynamics of your sound output are optimised. High volume outputs are softened, enabling you to watch your favourite action movie without disturbing others.

– PCM Output

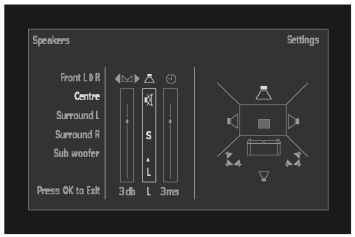
Allows to select PCM digital output between 48kHz and 96kHz. When 48kHz has been selected, 96kHz PCM data, (if available on disc) will be converted to 48kHz.
Some 96kHz DVD are copy protected. If your PCM output selection is 96kHz, the digital output will be muted to comply with the standards. In such cases, select 48kHz to enable digital output.

– Karaoke vocal

Put this setting to ON only when a multi-channel karaoke DVD is being played. The karaoke channels on the disc will then be mixed into a normal stereo sound.

– Speaker settings

Allows you to select speaker settings, volume balance and delay time, and to test the speaker settings.
Speaker settings are only active on the Multi-Channel Audio outputs for both DVD and SACD. Speaker settings will not be applied during playback in the SACD Stereo mode.



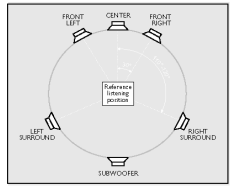
6 Channel settings

Front speaker
L (Large): When the front speakers can reproduce low frequency signals below 120Hz
S (Small): When the front speakers cannot produce low frequency signals below 120Hz

Center Speaker
L (Large): When the center speaker can reproduce low frequency signals below 120Hz
S (Small): When the center speaker cannot produce low frequency signals below 120Hz
Off: When the center speaker is not connected

Surround speakers
L (Large): When the surround speakers can reproduce low frequency signals below 120Hz
S (Small): When the surround speakers cannot produce low frequency signals below 120Hz
Off: When the surround speakers are not connected

Subwoofer
On: When you connect a subwoofer
Off: When a subwoofer is not connected

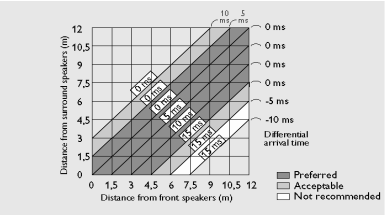


Delay times

The DVD player is set to reproduce correctly synchronized Digital Surround Sound in a listening area where the surround speakers are about 150cm nearer to the listening position than the front speakers, and the center speaker is in line with the front speakers. To adjust for other listening area arrangements, adapt delay times according to the following:

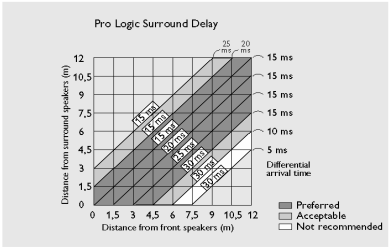
Digital Surround

Measure the distances in centimeters from the front speaker plane and from the surround speaker plane to the listening positioning plane. Subtract the surround distance from the front distance and divide by 30. The result is the required Surround Channel delay time in milliseconds.
If the center speaker is on the front speaker plane, no center speaker delay is needed. If, however, it is nearer to the listening position, measure the distance in centimeters between the front and center speaker planes, and divide by 30. The result is the required Center Channel delay time in milliseconds.



Dolby Pro Logic

If the delay times for Surround Channel and Center Channel are set for Digital Surround mode, the delay times for Dolby Pro Logic mode will automatically be calculated and set.



Language

Selecting disc languages:

Menu/Audio/Subtitle language

- This is to select the audio language, subtitle language and the language used in TV screen menus or DVD menus which will always be used for every disc to be played back.
- If the language selected is not available on the disc, the default language designated by each disc will be selected.

Features

– Access Control

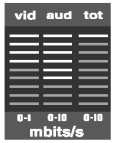
Access Control contains the following features:
Child Lock - When Child Lock is set to ON, a 4-digit code needs to be entered in order to playback discs.
Parental control - Allows the conditional presentation of DVDs containing Parental Control information (see 'Access Control' section).

– Status Window

Displays the current status of the player and appears with the menu bar. When disc playback is stopped, it is displayed with the 'Temporary Feedback Field' in the default screen. See 'On-Screen Display' information;
Factory setting is ON. Select OFF to suppress display of the Status Window.

– Bit Rate Indicator

Press the **DISPLAY** key to activate the bit rate indicator. When activated, the bit rate for video and audio, as well as the total bit rate is displayed. This is only applicable during playback of DVD and SVCD discs.



– Help text

When set to ON, help text describes the icons selected. Select OFF if you no longer require the help text.

– Beeper

The beeper can be set to ON or OFF.

– PBC (Playback Control - for VCD)

The Playback Control can be set to ON or OFF (see section "Special VCD & SVCD Features" for details).

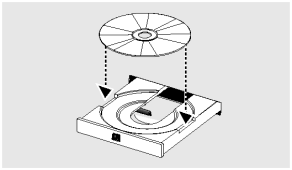
– Smart Power OFF

Puts the set to standby after a predefined time. This can be set to ENABLE or DISABLE.

English

Basic Playback

1. Press STANDBY ON on the front panel.
2. Press OPEN/CLOSE ▲ on the front panel to open disc loading tray.
3. Place the chosen disc in the tray, with the label facing up.
4. Press OPEN/CLOSE ▲ again to close the tray.
   ➜ READING appears in the status window and on the player display, and playback starts automatically.



Notes:
– DVDs may have a region code. Your player will not play discs that have a region code different from the region code of your player.
– If 'Child Lock' is set to ON and the disc inserted is not authorised, the 4-digit code must be entered and/or the disc must be authorised (see 'Access Control').

Playing a DVD-Video

- DVD video discs may have one or more TITLES, and each TITLE may have one or more CHAPTERS.
- Playback stops at the end of each TITLE.

Playing a title

1. Insert a disc and close the tray, playback starts automatically.
   ➜ The TV screen and DVD player's display show the type of disc loaded, disc's information and playing time.
2. When the Disc Menu appears on the TV screen, use ▼▲◄► keys or numerical keys on the remote control to select an option and continue playback.
3. If the titles are numbered , press the numerical keys or use the ▼ ▲ keys to select desired title in the menubar.
4. To stop playback, press **STOP**.

Smart Resume

- In stop mode and when a disc has not been ejected,
  ➜ Pressing PLAY will automatically resume playback from the point where the playback was last stopped.

To deactivate auto resume,

- Press STOP to stop playback.
  ➜ The help line text appears *"Press Stop again to start from beginning"* for 5 seconds.
- Press STOP again or unload the discs, the auto resume is cancelled.

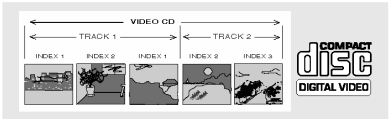
To activate auto resume,

- Reload the disc and press PLAY.
  ➜ Playback starts from the begining of the title.
- When resume icon I▶ appears on the screen, press PLAY again.
  ➜ Playback will resume from the point where the playback was last stopped.

Note:
– Resume feature is also applicable to VCDs and SVCDs.

Playing a Video CD

- Video CDs may have one or more TRACKS, and TRACKS may have one or more INDEXES.
- To make easy and convenient access, you can move between TRACKS and INDEXES.
- Some Video CDs have Play Back Control (PBC), which is a predefined playback sequence stored on the disc *(see Playback Control section)*.



Playing a disc

1. Insert the disc and close the tray, playback starts automatically.
   ➜ The number of tracks and the total playing time of the disc will appear on the TV screen and DVD player's display.
2. Press **PLAY**.
   ➜ The current track number and its elapsed playing time will be displayed.
3. Playback will stop at the end of the disc.
4. To stop playback, press **STOP**.
5. Disc Resume feature is also applicable for VCDs and SVCDs *(see "Smart Resume" section)*.

Playing a Super Audio CD

- Super Audio CDs contain only TRACKS
- Select tracks using the menubar on the TV screen or by pressing the numerical keys directly.
- If SACD-text or CD-text is available on the disc, it will be displayed on both the TV screen and player's front panel.
- Favourite Track Selection (FTS) programming is NOT possible on SACD discs.

SUPER AUDIO CD

Playing a disc

1. Insert a disc and close the tray, playback starts automatically.
   ➜ The TV screen will display the number of tracks for selection, current playing status and current playing layer.
2. Playback will stop at the end of the disc.
3. To stop playback, press **STOP**.

Sound Mode - SACD playback

- If the default Sound mode is set to multi channel and the inserted disc does not contain this mode, the player will automatically select the stereo mode.
- On hybrid discs (with SACD and CD layers), the player will always start playing the SACD layer.
- While the SACD disc is being played, the currently played layer is shown on the player front display as follows:
  SA 6 (for SACD Multi channel)
  SA 2 (for SACD stereo)
  CD (for CD layer of SACD)
- You can switch between SACD multi channel and SACD stereo layers (depending on availability of the mode on the disc) while the disc is playing by pressing the Sound Mode button on the remote control or the player front. The mode change will be indicated onthe player front display.
- Switching between the SACD and CD layer is not possible during playback.

1. Press **STOP** to stop the playback.
2. Press Sound Mode button on the remote control or the player front to toggle between SACD multi channel, SACD stereo and CD layers (depending on availability of the mode on the disc).
   ➜ The mode change will be indicated on the player front display.

Playing an Audio CD

- Audio CDs contain only TRACKS.
- They can be played on your DVD player with the audio output connected to a stereo system or to your TV.
- If CD-text is available on the disc, it will be displayed on both the TV screen and player's front display.
- Select tracks using the menubar on the TV screen or by pressing the numerical keys directly.
- Your DVD player also allows you to compile Favourite Track Selection (FTS) programmes for your discs by selecting or excluding tracks of your choice *(see FTS Programme - Audio CDs)*.

Playing a disc

1. Insert a disc and close the tray, playback starts automatically.
   ➜ The TV screen will display the number of tracks for selection and current playing status.
2. Playback will stop at the end of the disc.
3. To stop playback, press **STOP**.

Special DVD Features

DVDs may contain menus to navigate the disc and access special features. Press the appropriate numerical key or use the ▼, ▲, ▶, ◀ keys to highlight your selection in the DVD menu and press OK to confirm.

Title/Disc menu

1. Press **DISC MENU**.
   ➜ If the current title has a menu, the menu will appear on the screen. Otherwise, the disc menu will be displayed.
2. If disc menu is available on the disc, audio language, subtitle options, chapters for the title and other options will appear for selection.
3. To remove the title/disc menu, press **DISC MENU** again.

Camera Angle

Some discs contain scenes which have been shot simultaneously from various angles.
This DVD player allows you to select the desired camera angle.

- When the DVD player encounters a scene shot in multiple angles, it will give an indication on the "Temporary Feedback Field."
  ➜ The angle icon remains displayed until multiple angles are no longer available.
- Use the ▲/▼ to select the required angle.
  ➜ Playback changes to the selected angle.
- You can also select (**ANGLE**) in the menu bar or press the **ANGLE** button on the remote control directly.

Changing the audio language

1. Select (**AUDIO**) in the menu bar or press the **AUDIO** button on the remote control directly.
2. Press **AUDIO** or ▲/▼ repeatedly to select the different languages.

Subtitle Language

1. Select (**SUBTITLE**) in the menu bar or press the **SUBTITLE** button on the remote control directly.
2. Press **SUBTITLE** or ▲/▼ repeatedly to select the different subtitles.

Special VCD & SVCD Features

Playback Control (PBC)

1 Load a Video CD with PBC and press **PLAY**.
2 Go through the menu with the keys indicated on the TV screen until your chosen passage starts to playback. If a **PBC** menu consists of a list of tracks, you can select a track directly.
3 Enter your choice with the numerical keys (0-9).
4 Press RETURN to go back to the previous menu, if applicable on the menu.
5 You may also select **PBC OFF** under Personal Preferences.
➜ When set to OFF, PBC menus are not activated for further playback.

Special CD, SACD & MP3 Features

CD text, SACD text and MP3 text

1 Some CD, SACD or MP3-CD discs may contain text information (eg. track name, album name, artist name etc.) which will appear on the DVD/ SACD player and TV screen during playback.
2 By default, CD text display is set to ON.
3 To switch off the CD text display, press DISPLAY on the remote control during playback.
4 Press DISPLAY on the remote control again to switch on the text display mode.

General Features

Note:
– Unless stated, all operations described are based on remote control use. Some operations can be carried out using the menu bar on the TV screen.

Moving to another title/chapter

DVD VCD

When a disc has more than one title/track or chapter, you can move to another title/chapter as follows:
1 Press **SYSTEM MENU**, then select ⊤ or ◯ in the menu bar.
2 Press ▲▼ or numerical keys to select a title/ chapter.

CD SACD

1 Press ▶▶| or |◀◀ briefly during playback to go to the next track or to return to the beginning of the currect track respectively.
2 Press |◀◀ twice briefly to step back to the previous track.
3 To go directly to any track, enter the track number using the numerical keys (0-9).

Search

DVD VCD

1 Select ▶▶ (FAST MOTION) in the menu bar and press ▼.
2 Use the ◀ ▶ keys to select the required speed: -32, -8 or -4 (backward), or +4, +8, +32 (forward).
3 Select 1 to play the disc at normal speed again.
4 To exit FAST MOTION mode, press **PLAY** or ▲.

CD SACD

- To search forward or backward through different speeds, you can also hold down ▶▶| or |◀◀ for more than two seconds.

Slow Motion DVD VCD

1 Select ▶▮ (SLOW MOTION) in the menu bar and press ▼.
➜ Playback will pause.
2 Use the cursor keys ◀ ▶ to select the required speed: -1, -1/2, -1/4 or -1/8 (backward), or +1/8, +1/4, +1/2 or +1 (forward).
3 Select 1 to play the disc at normal speed again.
4 If ▮▮ is pressed, the speed will be set to zero (PAUSE).
5 To exit slow motion mode, press **PLAY**.

Still Picture and Frame-by-frame playback DVD VCD

1 Select ▶▮ (**STEP**) in the menu bar and press ▼.
➜ Playback will pause.
2 Use the cursor keys ◀ ▶ to select the previous or next picture frame.
3 To exit step by step playback, press **PLAY** or ▲.

Note:
– You can also activate frame-by-frame playback by pressing the PAUSE key repeatedly on the remote control.

Scan DVD VCD CD SACD

Scanning plays the first 10 seconds of each chapter/track on the disc.
1 Press **SCAN**.
2 To continue playback at your chosen chapter/ track, press **SCAN** again or press **PLAY**.

Repeat

DVD

Repeat chapter/title/disc

- To repeat the current chapter, press REPEAT.
➜ REPEAT CHP appears on the front display.
- To repeat the current title, press REPEAT a second time.
➜ REPEAT TTL appears on the front display.
- To repeat the entire disc, press REPEAT a third time.
➜ REPEAT DISC appears on the front display.
- To exit Repeat mode, press REPEAT a fourth time.

VCD CD SACD

Repeat track/disc

- To repeat the current track, press REPEAT.
➜ REPEAT TRK appears on the front display.
- To repeat the entire disc, press REPEAT a second time.
➜ REPEAT DISC appears on the front display.
- To exit Repeat mode, press REPEAT a third time.

Repeat A-B DVD VCD CD SACD

– DVD-Video Discs: repeat a sequence in a title
– Video and Audio CDs: repeat a sequence in a track
1 Press REPEAT A-B at your chosen starting point.
2 Press REPEAT A-B again at your chosen end point.
➜ REPEAT A-B appears briefly on the front display, and the repeat sequence begins.
3 To exit the sequence, press REPEAT A-B.

Shuffle

DVD

This shuffles the playing order of chapters within a title, if the title has more than one chapter.
1 Press SHUFFLE during playback.
➜ **SHUFFLE** appears on the screen for about two seconds.
2 To return to normal playback, press SHUFFLE again.

VCD CD SACD

This shuffles the playing order of tracks within a disc , if the disc has more than one tracks.
1 Press SHUFFLE during playback.
➜ **SHUFFLE** appears on the screen for about two seconds.
2 To return to normal playback, press SHUFFLE again.

Time search DVD VCD

The Time Search function allows you to start playing at any chosen time on the disc.

1 Select (TIME SEARCH) in the menu bar and press ▼.
➜ Playback will pause.
➜ The elapsed playing time is displayed in a time edit box.
2 Enter hours, minutes and seconds from left to right in the time edit box using remote control numerical key pad.
➜ Each time an item has been entered, the next item will be highlighted.
3 Press OK to confirm the selected time.
➜ The time edit box will disappear and playback starts from the selected time position on the disc.

4 Press SYSTEM MENU to remove the menu bar.

Zoom DVD VCD

The Zoom function allows you to enlarge the video image and to pan through the enlarged image.

1 Select (**ZOOM**).
2 Press ▲/▼ to activate the **ZOOM** function and select the required zoom factor: 1.33 or 2 or 4.
➜ Playback will continue.
➜ The selected zoom factor and '*Press OK to pan*' appears below the menu bar.
➜ The zoomed picture will appear on the TV screen.
3 Press OK to confirm the selection.
➜ The panning icon appears on the screen.
4 Use the ◄ ► ▲ ▼ keys to pan across the screen.
5 When OK is pressed only the panned picture will be shown on the screen.
6 To exit **ZOOM** mode, select zoom factor to "Off" (zoom factor 1) in the menu bar.

FTS Video/Audio Programme

- Favourite Track Selection (FTS) list contains up to 20 items (titles, chapters).
- The most recent programme list will be placed on top of the existing list.

DVD VCD

Storing a Programme

1 While playback is stopped, select **VIDEO FTS** ☑ in the menu bar.
2 Press ▼ to open the menu bar.
➜ The **VIDEO FTS** ☑ menu appears.
3 Press ► or ◄ or FTS *(on the remote control)* to select ON.

Storing titles/tracks

1 Press ▼ to select **TITLES/TRACKS**.
2 Use ► and ◄ to select the require title/tracks.
3 Press OK to store the entire selected title/tracks.
➜ The title number will be added to the list of selections.

Storing chapters/indexes

1 Press ▼ on the selected chapter/indexes number.
➜ The chapter/indexes number will be highlighted.
2 Use ► and ◄ to select the required chapter number.
3 Press OK to confirm the selection.
➜ The selected chapter/indexes confirmation will be added to the list of selections.
4 Press SYSTEM MENU to exit the **VIDEO FTS** ☑ menu.

Erasing a selection in a Programme

1 While playback is stopped, select **VIDEO FTS** ☑ in the menu bar.
2 Use ▼ to select **PROGRAM**.
3 Use ► and ◄ to select the required number.
4 Press OK to erase the selection.
5 Press SYSTEM MENU to exit.

Erasing all selections

1 While playback is stopped, select **VIDEO FTS** ☑ in the menu bar.
2 Use ▼ to select **CLEAR ALL** and press OK.
➜ All selections will be erased.
3 Press SYSTEM MENU to exit.

CD

Storing a Programme

1 Load a disc and stop playback.
2 Press ▼ to go to the list of available tracks.
3 Use ► and ◄ to select the required tracks or directly using remote control numeric key.
4 Press OK to store the selected tracks.
➜ The track number will be added to the list of selections.

Switching a Programme ON/OFF

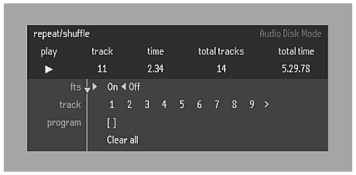
1 Use ▲▼ to move and select desired tracks.
2 Press ► or ◄ to select either ON or OFF.

Erasing a track in a Programme

1 Use ▼ to go to the programmed tracks.
2 Use ► and ◄ to select the required number.
3 Press OK to erase the selection.
4 Press SYSTEM MENU to exit.

Erasing all selections

- Use ▼ to select **CLEAR ALL** and press OK.
➜ All selections will be erased.



Note:
– *Audio track programming function is not available for MP3-CD and SACD discs.*

Auto Wake-up Timer

The wake-up timer allows your player to turn on after a preset time.

1 Select in the menu bar.
2 Press ▼.
➜ Time edit box will appear.
3 Use the ▲ or ▼ to select the sleep time. The maximum time you can select is 600 minutes. Selection is made by 30 minutes steps each time.
4 Press OK to confirm the selection.
5 The Wake-up Timer will activate when the set is switched to standby-mode.

MP3 Disc Features

Support following MP3-CD formats (ISO9660 format):

- Max. 30 characters
- Max. nested directory is 8 levels
- The max. ALB number is 32
- Supported VBR bit-rate
- Supported sampling frequencies for MP3 disc are: 32 kHz, 44.1 kHz, 48 kHz
- Supported Bit-rates of MP3 disc are: 32, 64, 96, 128, 192, 256 (kbps)

Following formats can't be supported

- The files like *.WMA, *.AAC, *.DLF, *.M3U, *.PLS
- Chinese filenames
- The non-session closed discs
- The discs recorded under UDF format

Downloading MP3 files from the Internet or copying songs from your own legal discs is a delicate process.

Sound Quality	Bit Rate	Approximate Reduction Ratio	Approximate total MP3-CD time	Comment
AM radio	32 kbps	40 : 1	40 hrs	Sound quality significantly affected – not recommended.
FM radio	64 kbps	20 : 1	20 hrs	
Near-CD	**96 kbps**	**15 : 1**	**15 hrs**	**Balanced sound quality – compression rate**
CD-like	**128 kbps**	**10 : 1**	**10 hrs**	
CD*	256 kbps	5 : 1	5 hrs	Compression rate low – suggest to play CDr instead
CD*	320 kbps	3 : 1	3 hrs	

You may experience an occasional "skip" while listening to your MP3 files. This is normal.

Additional note for MP3 disc Playback:

– In compliance with the SDMI, digital-out is muted while playing MP3 discs.
– Due to the recording nature of Digital Audio MP3 (DAM),only Digital Audio music will play.
– The disc reading time may exceed 10 seconds due to the large number of songs compiled onto one disc.
– For multi-session discs, only the first session will be available.

Album/Title

This feature allows you to view and select the next or previous MP3 disc Album/Title.

1 Press ▲/▼ to scroll through the previous or next Album.
2 Press ◀/▶ to scroll through the previous or next Track.
3 You can also select the desired album/track number directly using the numeric keys on the remote control.

Note:
– ***In STOP mode**: numbers are used for ALBUM selection.*
– ***In PLAY mode**: numbers are used for TRACK selection.*

- Only the following functions are possible for MP3 discs:
  – STOP / PLAY / PAUSE
  – SKIP NEXT / PREVIOUS
  – REPEAT (TRACK / ALBUM / DISC)

MP3 Discs - Album/Track/Disc

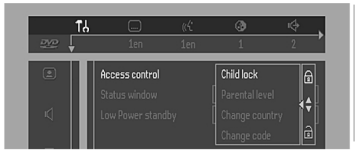
- To repeat a track, press REPEAT.
  ➜ **REPEAT TRK** appears on the player display.
- To repeat an album, press REPEAT a second time.
  ➜ **REPEAT ALBM** appears on the player display.
- To repeat the entire disc, press REPEAT a third time.
  ➜ **REPEAT DISC** appears on the player display.
- To exit REPEAT mode, press REPEAT a fourth time.
  ➜ **REPEAT OFF** appears on the player display.

Child Lock DVD VCD

Activating/deactivating the Child Lock

1 When disc playback is stopped, select **ACCESS CONTROL** in the Personal Preferences menu using the ▲/▼ keys.
2 Enter a 4-digit code of your own choice twice.
3 Move to "**CHILD LOCK**" using the ▲/▼ keys.
4 Move to 🔒 / 🔓 using the ▶ keys.
5 Select 🔓 using the ▲/▼ keys.
6 Press OK or ◀ to confirm, then press ◀ again to exit the Personal Preferences menu.
➜ Now unauthorised discs will not be played unless the 4-digit code is entered.
7 Select 🔓 to deactivate the **CHILD LOCK**.

Notes:
Confirmation of the 4-digit code is necessary when:
– *The code is entered for the very first time (see above),*
– *The code is changed or cancelled (see 'Changing the 4-digit code'),*



Authorising discs

1 Insert the disc.
➜ The 'child safe' dialog will appear.
2 You will be asked to enter your secret code for 'Play Once 'or 'Play Always.'

- If 'Play Once', disc can be played when in the player and the player is ON.
- If 'Play Always', disc will become authorised and can always be played, even if the Child Lock is set to ON.

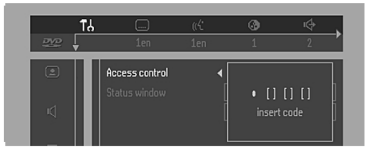
Notes:
– *The player memory can maintain 120 authorised ('Child safe') disc titles. A disc will be placed in the list when 'Play Always' is selected.*
– *Each time a 'child safe' disc is played, it will be placed on top of the list. When the list is full, the last disc in the list will be replaced when a new disc is added.*
– *Double-sided DVDs and multi-volume VCDs may have a different ID for each side. In order to make the disc 'child safe', each side has to be authorised.*

Deauthorising discs

1 Insert the disc.
➜ Playback starts automatically.
2 Press ■ while ☺ is visible.
➜ The ☹ will appear and the disc is now deauthorised.

Parental Control DVD

Movies on DVDs may contain scenes not suitable for children. Therefore, discs may contain 'Parental Control' information which applies to the complete disc or to certain scenes on the disc. These scenes are rated from 1 to 8, and alternative, more suitable scenes are available on the disc. Ratings are country dependent. The 'Parental Control' feature allows you to prevent discs from being played by your children or to have certain discs played with alternative scenes.



Access Control

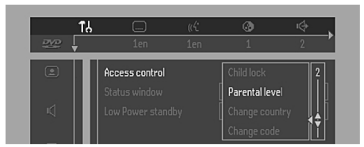
Activating/Deactivating Parental Control

1 When disc playback is stopped, select **ACCESS CONTROL** in the Personal Preferences menu using the ▲/▼ keys.
2 Enter your 4-digit code. If necessary, enter the code a second time.
3 Move to **Parental Control** using the ▲/▼ keys.
4 Move to value adjustment (1-8) using the ▶ key.
5 Then use the ▲/▼ keys or the numerical keys on the remote control to select a rating from 1 to 8 for the disc inserted.

Rating 0 (displayed as '– –'):
Parental Control is not activated. The Disc will be played in full.

Ratings 1 to 8:
The disc contains scenes not suitable for children. If you set a rating for the player, all scenes with the same rating or lower will be played. Higher rated scenes will not be played unless an alternative which has the same rating or lower is available on the disc. If no suitable alternative is found, playback will stop and the 4-digit code has to be entered.

6 Press OK or ◀ to confirm, then press ◀ again to exit the Personal Preferences menu.



Country

1 When disc playback is stopped, select **ACCESS CONTROL** in the Personal Preferences menu using the ▲/▼ keys.
2 Enter the 4-digit code.
3 Move to **CHANGE COUNTRY** using the ▼ key.
4 Press the ▶ key.
5 Select a country using ▲/▼.
6 Press OK or ◀ to confirm, then press ◀ again to exit the menu.

Changing the 4-digit code

1 When disc playback is stopped, select **ACCESS CONTROL** in the Personal Preferences menu using the ▲/▼ keys.
2 Enter the current 4 digit code.
3 Move to **CHANGE CODE** using the ▼ and press the ▶ key.
4 Enter the new 4-digit code.
5 Enter the code a second time and reconfirm by pressing OK.
6 Press ◀ to exit the menu.
➔ The new 4 digit code will be take effect.

If you forget your 4 digit code

1 Press ■ to exit the 'Child Safe' screen.
2 Select **ACCESS CONTROL** in the Personal Preferences menu using the ▲/▼ keys.
3 The 4-digit code can be cancelled by pressing ■ four times in the 'Access Control' dialog.
4 You can then enter a new code (twice!) as described above in 'Changing the 4 digit code'.

Parental Control Disclaimer

This DVD/SACD player features the **PARENTAL CONTROL** system which is to activate when playing DVD discs furnished with certain software coding only.
Also note that at the time of release of this DVD/SACD player, certain aspects of the technical standards had not been settled between set makers and the disc industries.
On this basis, Philips cannot guarantee the functioning of the **PARENTAL CONTROL** system and denies any liability associated with unintended watching of disc content.
If in doubt, please make sure the disc plays according to your **PARENTAL CONTROL** settings before you allow children access to the player.

Specifications

PLAYBACK SYSTEM

DVD Video
SACD multi channel and SACD stereo
Video CD & SVCD
CD (CD-Recordable and CD-Rewritable)
MP3 CD

TV STANDARD (PAL/50Hz) (NTSC/60Hz)

Number of lines	625	525
Playback	Multistandard	(PAL/NTSC)

VIDEO PERFORMANCE

RGB (SCART) output	0.7 Vpp into 75 ohm
YUV output	Y: 1Vpp into 75 ohm Pr/Cr Pb/Cb: 0.7Vpp into 75 ohm
S-Video output	Y: 1Vpp into 75 ohm C: 0.3Vpp into 75 ohm
Video output	1 Vpp into 75 ohm
Black Level Shift	On/Off
Video Shift	Left/Right

AUDIO FORMAT

DSD	Multichannel and Stereo
MPEG/	Compressed Digital
Dolby Digital	16, 20, 24 bits
DTS/PCM	fs, 44.1, 48, 96 kHz
MP3	96, 112, 128, 256 kbps and
(ISO 9660)	variable bit rate fs 32, 44.1, 48kHz

Full decoding of Dolby Digital and DTS multi channel sound
Analogue Stereo Sound
Dolby Surround-compatible downmix from Dolby Digital multi-channel sound
3D Sound for virtual 5.1 channel sound on 2 speakers

SACD AUDIO PERFORMANCE

D/A Converter	DSD	
SACD	fs 2.8224MHz	DC - 100kHz
Max output voltage (0dB)	2V rms	
Channel unbalance	<0.5 dB	
Cut-off frequency	50kHz (Front) 40kHz (Surround, Center, Subwoofer)	
Signal-Noise (1kHz)		105 dB
Dynamic Range (1kHz)		105 dB
Crosstalk (1kHz)		105 dB
Total Harmonic Distortion (1kHz)		97 dB

AUDIO PERFORMANCE (TYPICAL)

DA Converter	24 bits	
DVD	fs 96 kHz	4 Hz - 44 kHz
CD/Video CD	fs 44.1 kHz	4 Hz - 20 kHz
S-Video CD	fs 48 kHz	4 Hz - 22 kHz
	fs 44.1 kHz	4 Hz - 20 kHz
Signal-Noise (1kHz)		100 dB
Dynamic Range (1kHz)		100 dB
Crosstalk (1kHz)		105 dB
Total Harmonic Distortion (1kHz)		97 dB
MPEG MP3	MPEG Audio L3	

CONNECTIONS

SCART	2x Euroconnector
Y Pb/Cb Pr/Cr (480i)	Cinch 3x (green, blue, red)
S-Video Output	Mini DIN, 4 pins
Video Output	2x Cinch (yellow)
Audio L+R output	Cinch (white/red)
Digital Output	1 coaxial, 1 optical IEC958 for CDDA / LPCM IEC1937 for MPEG1/2, Dolby Digital, DTS

6 channel analog output

Audio Front L/R	Cinch (white/red)
Audio Surround L/R	Cinch (white/red)
Audio Centre	Cinch (blue)
Audio Subwoofer	Cinch (black)

CABINET

Dimensions (w x h x d)	435 x 77.5 x 303.5 mm
Weight	Approximately 3.1 Kg

POWER SUPPLY (UNIVERSAL)

Power inlet	110V-240V, 50/60Hz
Power usage	Approx. 23W
Power usage standby	< 1W

* *typical playing time for movie with 2 spoken languages and 3 subtitle languages*

Specifications subject to change without prior notice

Maintenance

Cleaning the Cabinet

- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs

- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the centre out. Do not wipe in a circular motion.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analogue records.

Cleaning the disc lens

- After prolonged use, dirt or dust may accumulate at the disc lens. To ensure good playback quality, clean the disc lens with Philips CD Lens Cleaner or any commercially available cleaner. Follow the instructions supplied with the cleaner.

Troubleshooting

WARNING

Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty. Do not open the system as there is a risk of electric shock.

If a fault occurs, first check the points listed below before taking the system for repair.

Problem	Solution
No power	– Check if the AC power cord is properly connected.
No picture	– Check if the TV is switched on. – Check the video connection.
Distorted picture	– Sometimes a small amount of picture distortion may appear . This is not a malfunction.
Completely distorted picture or black/white picture with DVD/SACD or Video CD	– Make sure the NTSC/PAL setting at the DVD player matches the video signal of your television. (See NTSC/PAL Conversion/Settings)

English

Troubleshooting

Problem	Solution
No sound or distorted sound	– Adjust the volume. – Check that the speakers are connected correctly.
No audio at digital output	– Check the digital connections. – Check the settings menu to make sure the digital output is set to ALL or PCM. – Check if the audio format of the selected audio language matches your receiver capabilities.
No sound and picture	– Check that the SCART cable is connected to the correct device (See Connecting to a TV)
Disc can't be played	– Ensure the disc label is facing up. – Check if the disc is defective by trying another disc.
Picture freezes momentarily during playback	– Check the disc for fingerprints/scratches and clean with a soft cloth wiping from centre to edge.
No return to start-up screen when disc is removed	– Reset the unit by switching the player off, then on again.
The player does not respond to the remote control	– Aim the remote control directly at the sensor on the front of the player. – Reduce the distance to the player. – Replace the batteries in the remote control. – Re-insert the batteries with their polarities (+/– signs) as indicated.
Buttons do not work or player stops responding	– To completely reset the player, unplug the AC cord from the AC outlet for 5-10 seconds.
Player does not respond to some operating commands during playback.	– Operations may not be permitted by the disc. Refer to the instructions of the disc.
DVD/SACD Video player cannot read CDs/DVDs	– Use a commonly available cleaning CD/DVD to clean the lens before sending the DVD/SACD player for repair.

If you are unable to remedy a problem by following these hints, consult your dealer or service centre.

4. Mechanical- and Dismantling Instructions

Dismantling Instructions

DISMANTLING INSTRUCTIONS

See exploded view of DVD763SA for item numbers

Mounting ↔ Dismounting

TopCover 300
→ Remove 4 screws 310 and 3 screws 305.
→ Lift cover from rearside to remove.

Front cabinet 001
→ Remove cable connections.
→ Open Tray (see instruction below).
→ Unlock Tray cover 095 and close tray.
→ Unlock Front panel from frame by releasing successively 4 snaps. (2 on the side and 2 on the bottom)
→ Place Front panel in front of the set (service position).

Front Display board 1002
→ Remove cable connections.
→ Remove the navigation button 120.
→ Remove 6 screws 100. (Board to Front cabinet)
→ Dismount board.

Front Standby board
→ Remove cable connection.
→ Remove 2 screws 110. (Board to Front cabinet)
→ Dismount board.

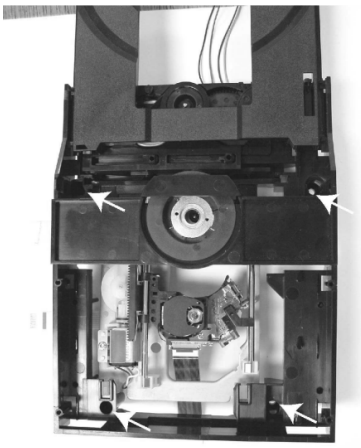
DVD Module 145
→ Remove flex connections to A/V board.
→ Open tray (see instruction below).
→ Unlock Tray cover 095.
→ Remove 4 screws 185. (Loader to bottom bracket)
→ Remove 2 screws 200. (Monoboard to bottom bracket)
→ Close tray.
→ Lift module up slightly and move backward to remove.

DVD Monoboard
→ Remove flex and cable connections from DVD Loader to Monoboard.
→ Remove 4 screws 10 to 13. (Monoboard to Loader,VAL6011/14)
→ Dismount Monoboard.

Double Scart board 1003 (Only for DVD763SA /EU)
→ Remove flex connection to conn 1300 on scart board.
→ Remove 4 screws 290. (scart to back-plate)
→ Dismount board.

A/V board 1001
→ Remove Double Scart board (Only for DVD763SA /EU)
→ Remove flex and cable connections.
→ Remove 7 screws 275 (skt cinch ,optical to back-plate) and screw 280. (S-video to back-plate)
→ Release 2 spacer locking.
→ Dismount board.

Power supply unit 1005
→ Remove cable connections.
→ Remove 2 screws 190. (Board to bottom frame)
→ Release 2 spacer locking. (Board to bottom frame)
→ Dismount board.



Remove 4 screws to remove loader.

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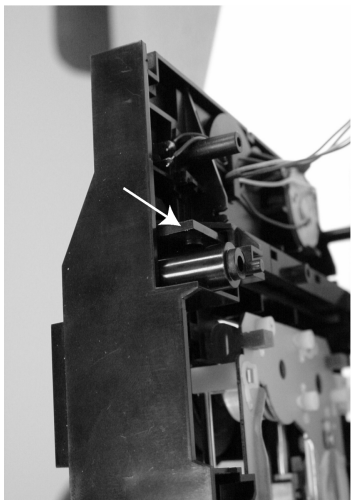
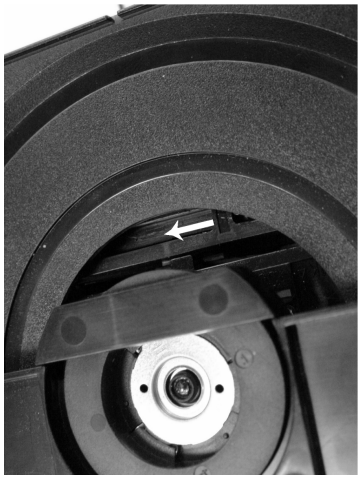


When a disc is loaded, unlock the tray by pushing the slide inwards with a screwdriver and pull tray outwards.

Manually opening of tray

When it is not possible to open the tray with the EJECT button, the tray can be manually opened.
When no disc is loaded, unlock the tray by moving the slide from left to right and pull tray outwards.



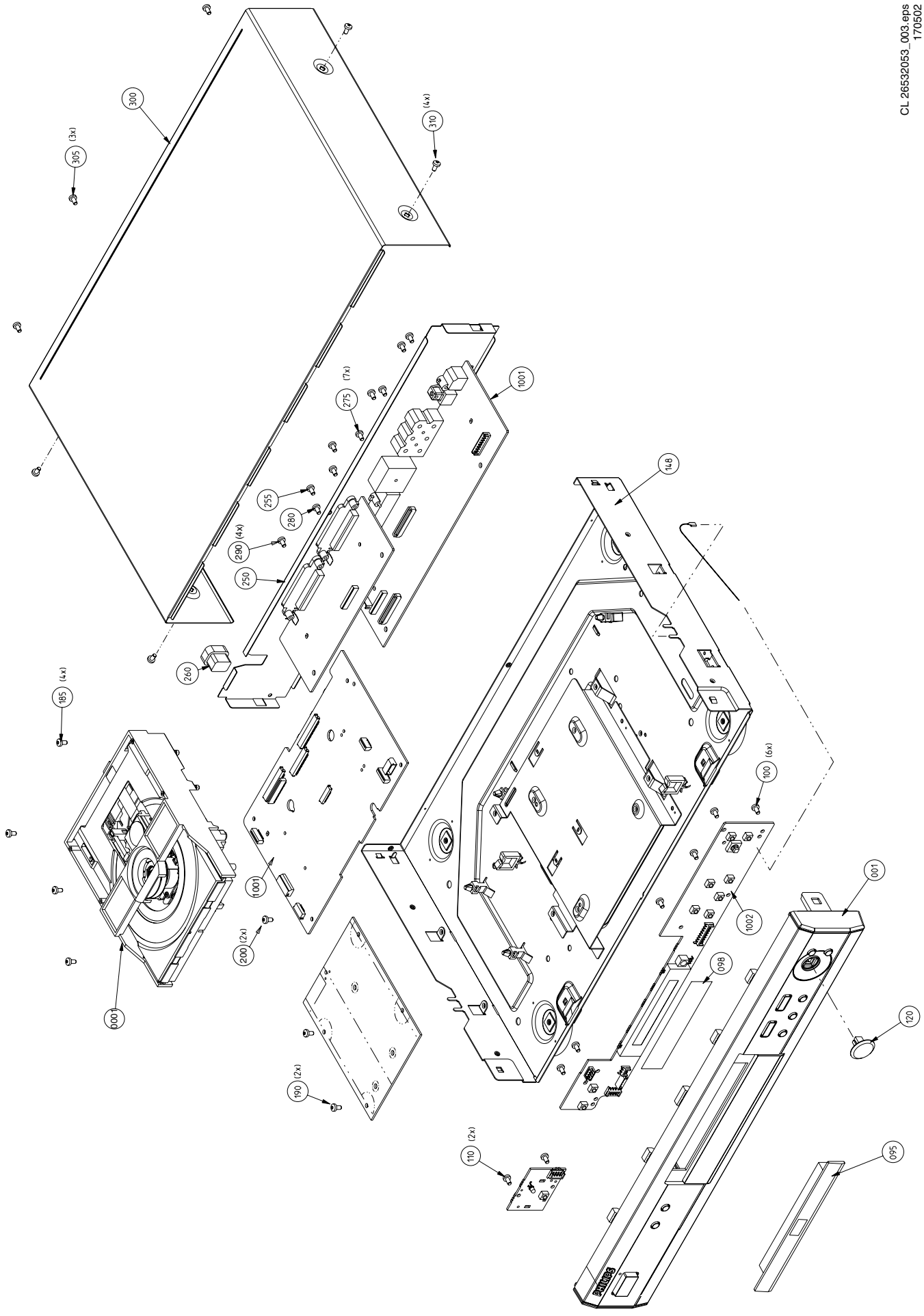


Figure 4-1 Exploded view

5. Diagnostic Software, Trouble Shooting and Test Instructions

5.1 Dealerscript

5.1.1 Purpose of Dealer Script

The dealer script can give a diagnosis on a standalone DVD player, no other equipment is needed to perform a number of hardware tests to check if the DVD player is faulty. The diagnosis is simply a "error" or "pass" message. No indication is given of faulty hardware modules. Only tests within the scope of the diagnostic software will be executed hence only faults within this scope can be detected.

5.1.2 Contents of Dealer Script

The dealer script executes all diagnostic nuclei that do not need any user interaction and are meaningful on a standalone DVD player.
The nuclei called in the dealer script are the following (the number after each nucleus name corresponds with the number being on the local display when the nucleus is executed during the dealer script):

Nucleus

Display Countdown	Nucleus Number	Nucleus Name	Description
7	6	PapChksFl	Calculate and verify checksum of FLASH memory
6	12	PapI2cDisp	Checks the I2C interface with the slave processor on the display board
5	13	PapS2bEcho	Checks the I2C interface to the basic engine
4	11	PapI2cNvram	Checks the I2C interface with the NVRAM
3	15	PapNvramWrR	Pattern test of all locations in the NVRAM
2	16	CompSdramWrR	Pattern test of all locations in the SDRAM(s)
1	63	FURORERSdramWrRLow	Pattern test of all locations in the SDRAM(s)

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Figure 5-1 Dealer script nuclei

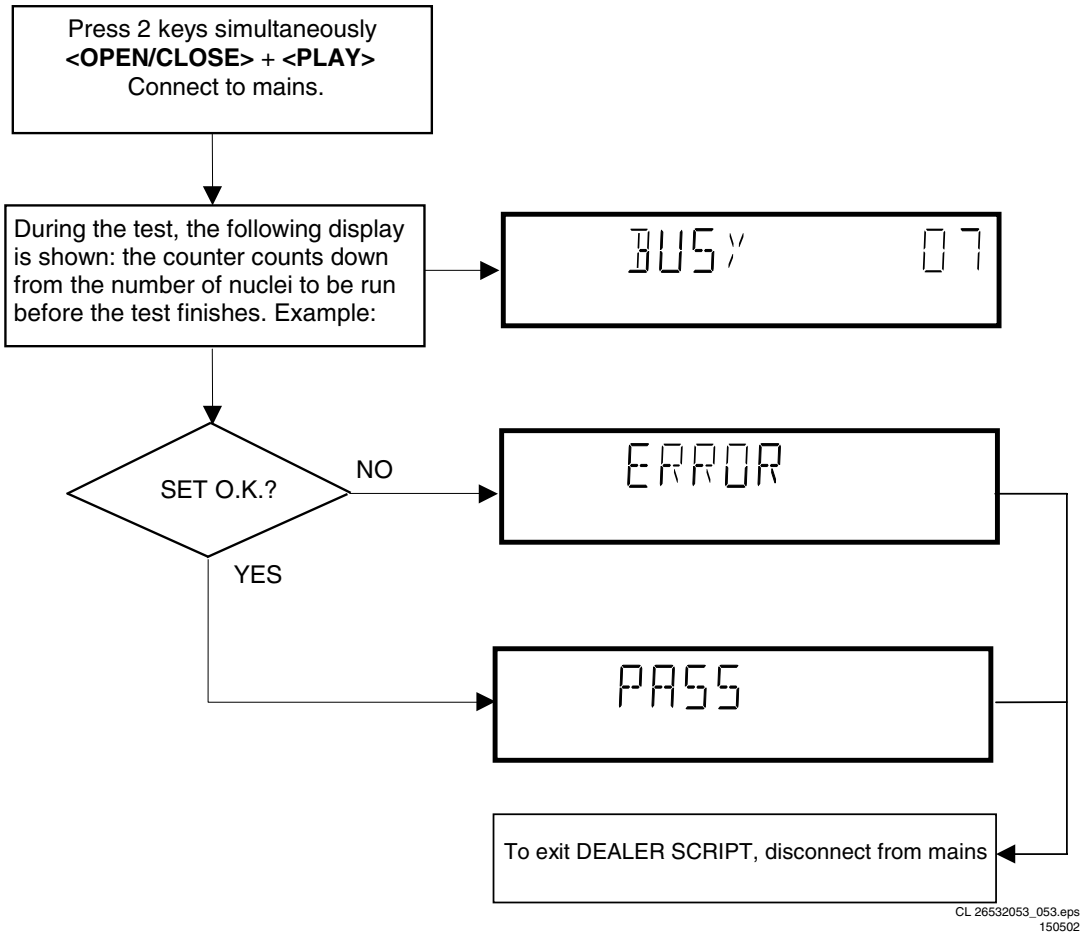

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Figure 5-2 Dealer Script

5.2 Player Script

5.2.1 Purpose of Player Script

The Player script will give the opportunity to perform a test that will determine which of the DVD player's modules are faulty, to read the error log and error bits and to perform an endurance loop test. To successfully perform the tests, the DVD player must be connected to a TV set to check the output of a number of nuclei. For DVDv2b a multi-channel amplifier, a set of 6 speakers and an external video source are necessary to test. To be able to check results of certain nuclei, the player script expects some interaction of the user (i.e. to approve a test picture or a test sound). Some nuclei (e.g. nuclei that test functionality of the Basic Engine module) require that the DVD player itself is opened, to enable the user to observe moving parts and approve their movement visually. Only tests within the scope of the diagnostic software will be executed hence only faults within this scope can be detected.

5.2.2 Contents of Player Script

The player script contains all nuclei that are useful on a DVD player that is connected to a TV set and help to determine which module of the DVD player is faulty, as well as to read out the contents of the error logs.

5.2.3 Structure of Player Script

The player script consists of a set of nuclei testing the three hardware modules in the DVD player: the Display PWB, the Digital PWB, and the Basic Engine.
Nuclei run by the player test need some user interaction. In the next paragraph this interaction is described. The player test is done in two phases:

1. **Interactive tests:** this part of the player test depends strongly on user interaction and input to determine nucleus results and to progress through the full test. Reading the error log and error bits information can be useful to determine any errors that occurred recently during normal operation of the DVD player.
2. **The loop test**: this part of the player test will loop through the list of nuclei indefinitely, till the player is reset. The list of nuclei is as follows:
   - PapChksFlash
   - PapI2cNvram
   - CompSdramWrR
   - PapS2bEcho
   - PapI2cDisp

At the beginning of the tests, the DSW version number will be indicated on the local display of the DVD.
The display will look like the following:

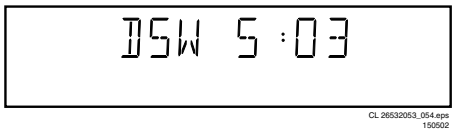

Figure 5-3

Pressing the PLAY key will proceed to the slave S/W version display, which is shown on the local display of the DVD player.
The display will look like the following:

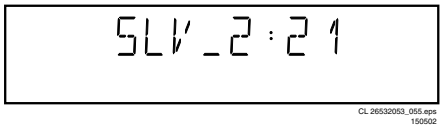

Figure 5-4

Press the OPEN/CLOSE key to proceed to the next test.

5.2.4 Survey

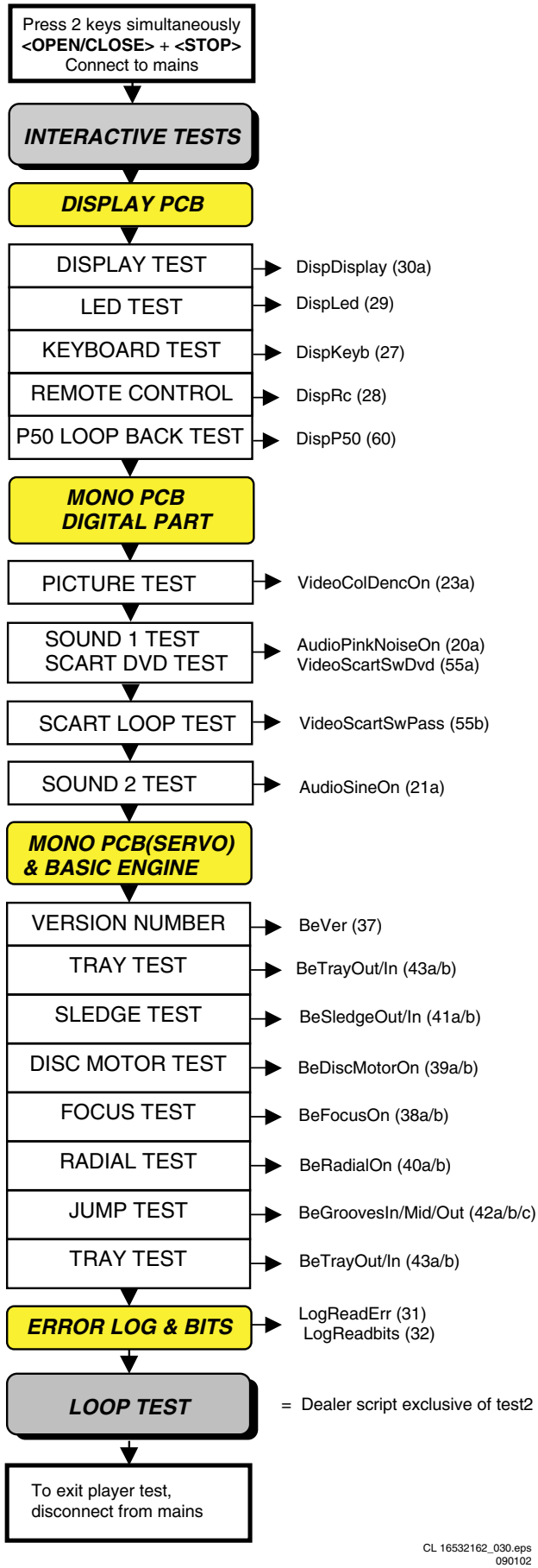

Figure 5-5

5.3 Display PCB

5.3.1 Display Test

The display test is performed by nucleus DispDisplay. By putting a serie of test patterns on the local display, the local display is tested. To step through all different patterns, the user must either press OPEN/CLOSE (pattern is ok) or STOP (pattern was incorrect) to proceed to the next pattern. The display of patterns is continued in a cyclic manner, shown in Fig. 5-6, until the user presses PLAY. If the user presses PLAY before all display patterns are tested, the DispDisplay nucleus will return FALSE (display test unsuccessful).

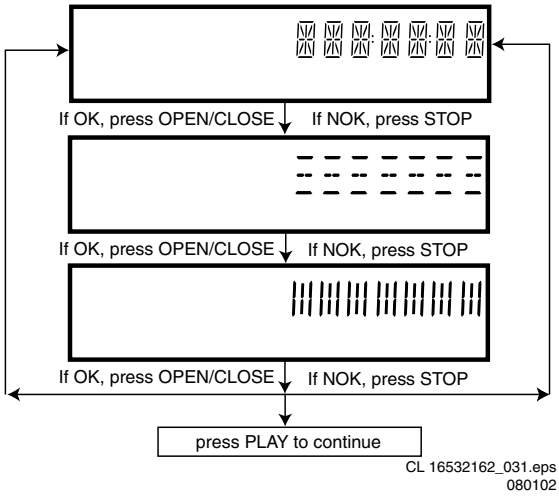

Figure 5-6

5.3.2 LED Test

The LED(s) on the DVD player is (are) tested by nucleus DispLed. The user must check if the LED(s) is (are) lighted; if it is, press OPEN/CLOSE, if it is not, press STOP. By pressing PLAY the script will proceed to the next test. If the user presses PLAY before OPEN/CLOSE or STOP, the DispLed nucleus will return TRUE (LED test successful).

5.3.3 Keyboard Test

The keyboard of the DVD player is tested by nucleus DispKeyb. The user is expected to press all keys on the local keyboard once. The code of the key pressed is shown on the local display (1 hexadecimal digit) immediately followed by a (hexadecimal) number indicating how many times that key has been pressed. Example of the local display during this test:

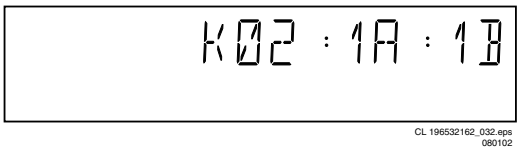

Figure 5-7

The key-codes displayed on the local display will scroll from right to left when the display gets full, the text "K" will remain on display.

KEY ID	KEY
0	PLAY/PAUSE
1	STOP
2	OPEN/CLOSE
3	STANDBY
4	NEXT
5	PREVIOUS
7	SMART PICTURE
8	NAVIGATION -UP
9	NAVIGATION -DOWN
A	NAVIGATION - LEFT
B	NAVIGATION - RIGHT
C	DISC MENU
D	OK
E	SOUND

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Figure 5-8

If any keys are detected more than once (due to hardware error), the key-code is displayed twice (or more), with the second digit increased by 1.
If the user does not press all keys minimally once (in any order), the DispKeys nucleus will return FALSE and cause an error in the overall result of the player script.
The user can leave the keyboard test by pressing the PLAY key on the local display of the DVD player for at least one full second.
The result of the keyboard test is shown on local display as follows:

Figure 5-9

Or

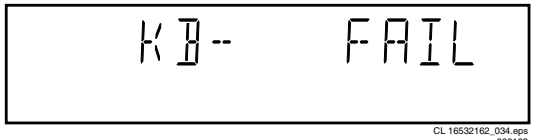

Figure 5-10

Pressing PLAY on the local keyboard again will proceed to the next text.

5.3.4 Remote Control Test

The remote control of the DVD player is tested by nucleus DispRc. The user must press any key on the remote control just once. The codes of the key pressed will be shown on the local display in hexadecimal format. Example:

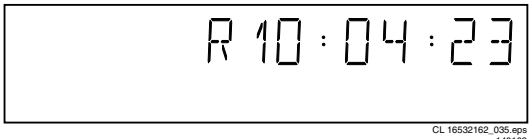

Figure 5-11

In this example 23 is the hexidecimal code of the pressed RC key. The user can leave the remote-control test by pressing PLAY on the local keyboard of the DVD player. The remote control test is successful if a code was received before the user pressed the PLAY key. Pressing the PLAY key, before pressing a key on the remote control, gives an error in the remote control test (note that the remote control test will also fail if a key on the remote control was pressed but no code was received). The remote control test does not check upon the contents of the received code, that is it will not be checked if the received code matches the key pressed. If desired, the user can manually check this code by using a code-table for the remote control key-codes.

RC Key id	Hexadecimal code
STANDBY	0C
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
0	0
RETURN	83
DISPLAY	EF
DISC MENU	54
SYSTEM MENU	82
CURSOR UP	58
CURSOR DOWN	59
CURSOR LEFT	5A
CURSOR RIGHT	5B
OK	5C
PREVIOUS	21
NEXT	20
STOP	31
PLAY	2C
PAUSE	30
SUBTITLE	4B
ANGLE	85
ZOOM	F7
AUDIO	4E
REPEAT	1D
REPEAT A-B	3B
SHUFFLE	1C
SCAN	2A

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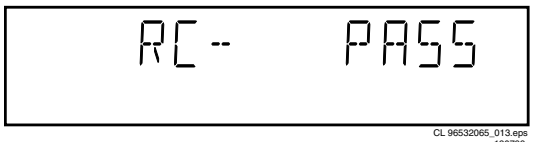
Figure 5-12

After pressing PLAY, the result of the remote control test is displayed on the local display of the DVD player as follows:



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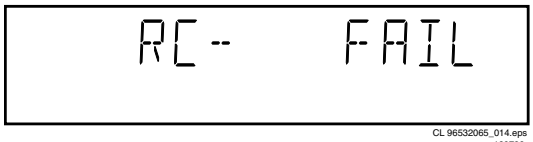
120799

Figure 5-13

Or



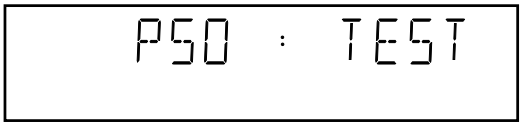
CL 96532065_014.eps
120799

Figure 5-14

Pressing PLAY on the local keyboard again will proceed to the next test.

5.3.5 P50 Loop-Back Test

For the P50 loop-back test, the user must first press a key to decide if the test is to be performed.
The display will show the following message:



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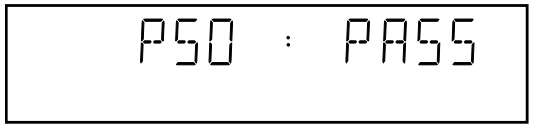
090102

Figure 5-15

If the user presses STOP, the P50 test will be skipped.
If the user presses OPEN/CLOSE, the P50 test is performed and the result is displayed as follows:

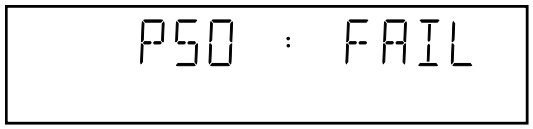
Test successful:



CL 16532007_005.eps
090102

Figure 5-16

Test fails:



CL 16532007_006.eps
090102

Figure 5-17

Press the PLAY key to continue to the next text

5.4 Mono PCB Digital Part

5.4.1 Picture Test

The picture test is performed by putting a predefined picture (colour bar) on the display (nucleus VideoColDencOn), and asking the user for confirmation.
The display will show the following message:

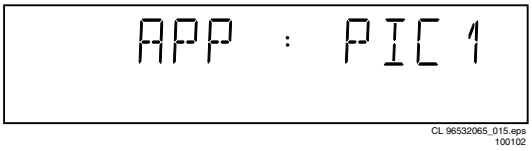


Figure 5-18

By pressing OPEN/CLOSE the user confirms the test, pressing STOP will indicate the picture was invisible or incorrect. Pressing PLAY will proceed to the next test. If the user presses PLAY without pressing OPEN/CLOSE or STOP first, the result of this test will be TRUE (picture ok).

Note: The colour bar must be simultaneously available on the CVBS, YC, and RGB (or YUV) outputs available. On the SCART only the CVBS and RGB signals will be available.

5.4.2 Sound 1 & SCART DVD Test

The first soundtest is performed by starting a pink noise sound that needs confirmation from the user (nucleus AudioPinkNoiseOn).
The display will show the following message:

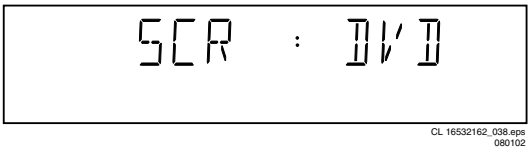


Figure 5-19

On the TV screen a colour bar (generated by nucleus VideoColDencOn) is visible and the internally generated pinknoise is audible.
By pressing the PLAY key, the user confirms the test. Pressing the STOP key will indicate the sound was inaudible or incorrect.

Note: Only for double scart models, SCART loop-through will be simultaneously active during this test. SCART loop-through will be measured with the aid of an external video source.
By pressing the PLAY key, there will be switched over to the external source. This must become now visible on the TV srcreen (using the SCART).
The local display will show the following message:

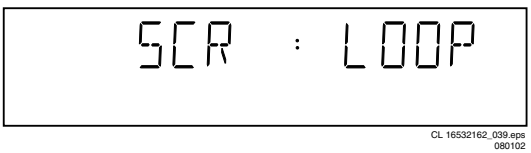


Figure 5-20

The internally generated colour bar is still available on the CVBS and Y/C outputs. And the pinknoise-signal is still available on the cinch audio outputs. By pressing the OPEN/CLOSE button, the internal generated colour bar becomes visual again.

The test can be left by pressing the PLAY key for more than one second.

5.4.3 Sound 2 Test

The second soundtest is performed by producing a sine sound (nucleus AudioSineOn). The signal can be stopped by pressing the STOP key.
The display will show the following message:

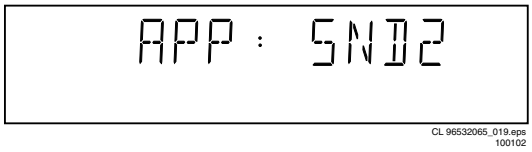


Figure 5-21

After the audio signal has been stopped, by pressing OPEN/CLOSE, the user confirms the test. Pressing STOP will indicate that something went wrong. Pressing PLAY will proceed to the next. If the user presses PLAY without pressing OPEN/CLOSE or STOP first, the result of this test will be TRUE (sound ok).

5.5 Basic Engine

5.5.1 Version Number

In the basic engine tests, the version number of the Basic Engine will be shown first, as the following example:

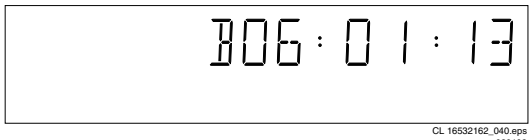


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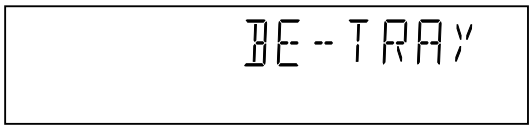
Figure 5-22

By pressing the PLAY key, the Basic Engine tests are started.

5.5.2 Tray Test

First, the tray is tested. The purpose of this test is also to give the user the opportunity to put a disc in the tray of the DVD player. Some tests on the Basic Engine require that a disc (e.g. DVD MPTD test disc) is present in the player. At the end of the Basic Engine tests this tray test will be repeated solely to enable the user to remove the disc in the tray.
The local display will look as follows:



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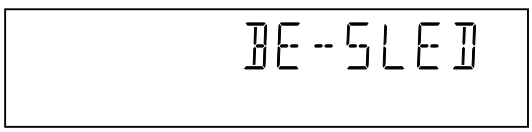
080102

Figure 5-23

By pressing OPEN/CLOSE the user can toggle the position of the tray. Note that this test will not contribute to the test result of the Basic Engine. Pressing PLAY will proceed to the next test. At this point, the tray will be closed automatically by the software if it was open.

5.5.3 Sledge Test (Visual Test)

The second Basic Engine test tests the sledge. The user can move the sledge as many times as desired by using OPEN/ CLOSE (nucleus BeSledgeOut) and STOP (nucleus BeSledgeIn). Pressing PLAY on the local keyboard proceeds to the next test. Note that this test will not contribute to the test result of the Basic Engine.
The local display will look as follows during the sledge test:



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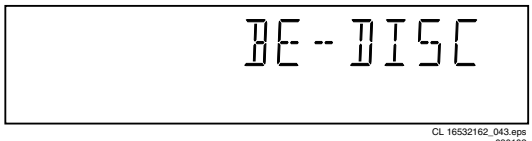
080102

Figure 5-24

5.5.4 Disc Motor Test (Visual Test)

The third Basic Engine test tests the disc motor (nucleus BeDiscMotorOn).
The local display looks as follows:



CL 16532162_043.eps
080102

Figure 5-25

By pressing OPEN/CLOSE the user confirms that the disc motor is running. Pressing STOP indicates the disc motor does not work. Pressing PLAY proceeds to the next test, after a reset of the disc motor (nucleus BeDiscMotorOff). If the user presses PLAY before pressing OPEN/CLOSE or STOP, the result of this test will be TRUE (disc motor is running).

5.5.5 Focus Test (Visual Test)

The fourth Basic Engine test tests the focussing. First focussing is turned on by calling nucleus BeFocusOn.
The display will look as follows:

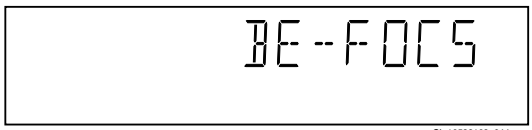


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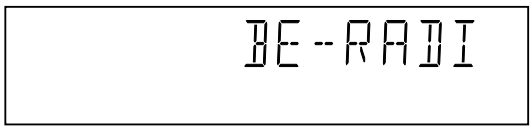
Figure 5-26

By pressing OPEN/CLOSE the user confirms that the focussing was succesful. Pressing STOP indicates a focussing failure. Pressing PLAY proceeds to the next test after a reset of the focussing (nucleus BeFocusOff). If PLAY is pressed before OPEN/CLOSE or STOP, the result of this test will be TRUE (focus successful).

5.5.6 Radial Test (Visual & Listening Test)

The fifth Basic Engine test tests the radial functionality (nucleus BeRadialOn).
The local display looks as follows:



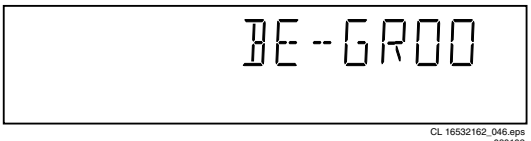
CL 16532162_045.eps
080102

Figure 5-27

By pressing OPEN/CLOSE the user confirms that the radial function works.Pressing STOP indicates the function does not work. Pressing PLAY proceeds to the next test, after a reset of the radial (nucleus BeRadialOff). If the user presses PLAY before pressing OPEN/CLOSE or STOP, the result of this test will be TRUE (radial successful).

5.5.7 Jump Test (Listening Test)

The sixth and last Basic Engine test tests the jumping by calling nuclei BeGroovesIn, BeGroovesMid and BeGroovesOut.
During this test, the local display looks as follows:



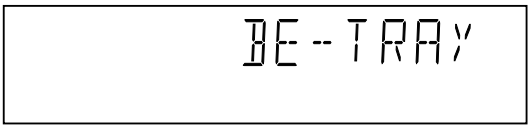
CL 16532162_046.eps
080102

Figure 5-28

The user can switch between the three different types of groove settings by pressing OPEN/CLOSE (forward to next nucleus in the list In-Mid-Out), or STOP (backward in the list In-Mid-Out). This is done in a cyclic manner; note that this test will not contribute to the test result of the Basic Engine. Pressing PLAY proceeds to the next test, after the disc motor has been shut off with a call to nucleus BeDiscMotorOff.

5.5.8 Tray Test

As a last action for the Basic Engine tests, the tray test is repeated. The local display will look as follows:



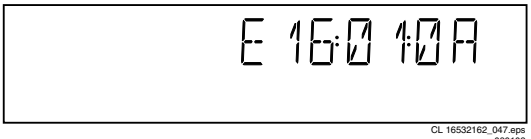
CL 16532162_041.eps
080102

Figure 5-29

This test is meant to give the user the opportunity to remove the disc in the tray. The tray position can be toggled using the OPEN/CLOSE key. The tray will be closed (by the software, if it is open) before proceeding to the next test when the user presses the PLAY key.

5.5.9 Error Log (See Table on Page 25)

Reading the error log and error bits information can be useful to determine any errors that occurred recently during normal operation of the DVD player. Reading the error log is done by nucleus LogReadErr.
The display during the errorlog readout looks as follows :



CL 16532162_047.eps
080102

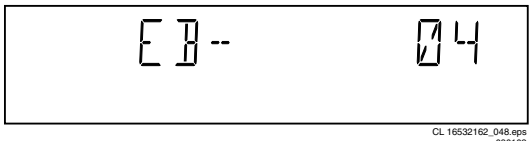
Figure 5-30

Note: Previous versions of the diagnostic software showed a 8-digit error code.
Due to limitations in the number of digits that can be displayed by some front panel displays, the most significant digits will not be shown. This can be done since all the error codes used by this player has set these 2 digits to “00”

By pressing OPEN/CLOSE or STOP the user can move forward or backward (respectively) through the logged error codes. If "0000" is displayed at all positions, the error log is empty. Display of the logged errors is done in a cyclic manner. By pressing PLAY on the local keyboard, the user can proceed to the next test.

5.5.10 Error Bits

Reading the error bits is done by nucleus LogReadBits. The display during the errorbits readout looks as follows:



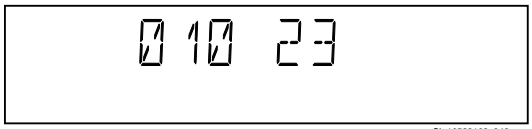
CL 16532162_048.eps
080102

Figure 5-31

Only the identification number (decimal) representing set errorbits will be shown. By pressing OPEN/CLOSE or STOP, the user can move forward or backward (respectively) through the logged errorcodes. If the display only shows "EB-0", no error bits were set. By pressing PLAY the user can continue to the next test.

5.6 Loop Test (See Table Below)

At the start of the loop test, the local display of the DVD player will show the interactive player test result readout in the following display:



CL 16532162_049.eps
080102

Figure 5-32

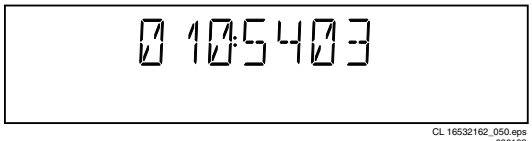
The left side of the display contains a 3-digit code, which can have a value between 000 and 111. These values indicate the faulty modules and are to be interpreted as follows:

Displayed Value	Indication for each module		
	Basic Engine	Mono PCB	Display PCB
000	ok	ok	ok
001	ok	ok	faulty
010	ok	faulty	ok
011	ok	faulty	faulty
100	faulty	ok	ok
101	faulty	ok	faulty
110	faulty	faulty	ok
111	faulty	faulty	faulty

CL 96532065_031.eps
120799

Figure 5-33

The loop test will perform the same nuclei as the dealer test, but it will loop through the list of nuclei indefinitely. The display of the DVD player will display not only the three digits indicating correct/faulty modules and the last found error code (as mentioned, faults are detected as far as they can be within the scope of the diagnostic software), but also a loop counter indicating how many times the loop has been gone through. If an error was detected, the display will remain as in figure 5-34 until the user presses the PLAY key and then it will continue to the next loop.
Example:



CL 16532162_050.eps
080102

Figure 5-34

The 2-digit number (23) on the right of figure 5-32 indicates the number of times the loop test has been performed.

After one loop cycle: Display the 3-digit module bits together with the last error code which occured in the loop test. The 4 digits at the right side of the display (fig. 5-34) show the last error that was found during the loop test. The leftmost two digits (54) of this code indicates which nucleus resulted in a fault. The rightmost two digits (03) refer to the faultcode within that nucleus. For further explanation of this error code, refer to chapter 5.8 (Nuclei Error Codes).

5.6.1 Errorlog

Explanation:
The application errors will be logged in the NVRAM. The maximum number of error bytes that will be visible is 16. The first word (4 digits) of the byte is the component identification, the last word is the error code.
The diagnostics software will present a combination of this component identification plus an error code on the local display (and on the attached terminal). The last reported error is shown as < 00000000, the oldest visible error as 00000000 > and the errors in between as < 00000000 >.
The devices that may report errors are the serial controller (UART), the basic engine (BE), the slave processor (SLPH), the SACD Stream Manager (SSM) and the SACD Media Access (SMA). The identification of these components is as follows:

Component name	Component identification
Serial controller (UART)	000A
Engine (BE)	0016
Slave Processor (SLPH)	001A
SACD Stream Manager (SSM)	001C
SACD Media Access (SMA)	002E
Diagnostic software (DS)	Dxxx

The tables in the next chapters list the error code and corresponding problem. The column 'Explanation' holds a more elaborate description and the most likely reason for the error.

Some Examples:
002E0000 (SMA reported a timeout error)
0016010A (Engine could not fully close or open the tray)
D0010001 (Flash checksum failed).

For further explanation of DS errors, see description of nucleui error codes in paragraph 5.8.

UART Error Codes

Error Number	Error name	Explanation
0000	BUF_OVERFLOW	To many characters were offered in too little time. Reason: system was too busy doing other jobs.
0001	COMMUNICATION	Usually a protocol error. Reason: bad connection between engine and processor.
0002	TIME OUT	

BE Errors

Error Number	Error name	Explanation
0101	S2B_ILL_COMMAND	Parameter(s) not valid for this command. Reason: some communication problem between UART and engine.
0102	S2B_ILL_PARAM	Command not allowed in this state or unknown. Reason: see S2B_ILL_COMMAND error
0103	S2B_SLEDGE	Sledge could not be moved to home position.
0104	S2B_FOCUS	Focus failure
0105	S2B_MOTOR	Motor could not reach speed within timeout
0106	S2B_RADIAL	Servo didn't get on track after several retries.
0107	S2B_PLL_LOCK	PLL could not lock in Accessing or Tracking state
0108	SBC_HEADER_TO	Header timeout
0109	S2B_SBC_NOT_FOUND	Requested subcode item could not be found.
010A	S2B_TRAY	Tray could not be opened or closed completely.
010B	S2B_TOC_READ	TOC could not be read within timeout period.
010C	S2B_JUMP	Requested seek could not be performed.
010D	S2B_NON_EXIST_SES	Attempt to access a non-existing session.
010E	S2B_NON_EXIST_BCA	Caller tries to acces a non-existing BCA area
010F	Speed setting	A wrong or inappropraiate speed value has been set
0116	NO_DISC	No disc selected
011A	TRAY_INIT	After reset, initialized tray
011B	NO TOC INFO	No TOC information in lead-in area or erase TOC found
01F0	S2B_OVERRUN	Too many bytes received over S2B Reason: see S2B_ILL_COMMAND error
01F1	S2B_COMM_TO	Not enough bytes are received over S2B Reason: see S2B_ILL_COMMAND error
01F2	S2B_PARITY	Byte received with parity error. Reason: see S2B_ILL_COMMAND error
01F3	S2B_ILL_PHASE	CMD IDC is not valid, transmission out of sync. Reason: see S2B_ILL_COMMAND error
01F4	S2B_ILL_NR_OF_BYTES	Byte count has an illegal value. Reason: see S2B_ILL_COMMAND error

SLPH Error Codes

Error Number	Error name	Explanation
0000	COMMUNICATION	Error in I2C communication. Reason: bad connection between slave processor and main processor.

SSM Error Codes

Error Code	Error name	Explanation
0006	SP_SYNCERROR	System cannot get synchronised with sectors coming from disc. Reason: Usually a damaged disc or the player was dropped/ pushed during operation. If not, the engine is malfunctioning.
0007	SP_EDCERROR	Data coming from disc is damaged. Reason: see SP_SYNCERROR

Error Code	Error name	Explanation
0008	SP_CONTINUITYERROR	Sequence of sectors coming from disc is incorrect. Reason: see SP_SYNCERROR
0009	DMX_CONTINUITYERROR	Sequence of sectors is incorrect. Reason: problem with buffer RAM
000A	LLD_ERROR	An illegal audio format was offered to the decoder. Reason: unknown audio type on disc or problem with buffer RAM
000B	BCU_ERROR	Internal problem in Furore chip

SMA Error Codes

Error Number	Error name	Explanation
0000	SMA_TIMEOUTERROR	Data coming from disc not in time. Reason: damaged disc or engine problem.

5.6.2 Reprogramming of New Mono Boards.

Caution

This information is confidential and may not be distributed. Only a qualified service person should reprogram the mono board.

After reset of NV-memory or repair of the mono board, all the customer settings and also the region code will be lost.
Reprogramming of the mono board will put the player back in the state in which it has left the factory, i.e. with the default settings and the allowed region code.
Reprogramming is limited to 25 times
When the counter reaches 25, reprogramming is not possible anymore
Reprogramming will be done by way of the remote control.
Put the player in stop mode, no disc loaded.
Press the following keys on the remote control:
<***PLAY***> followed by numerical keys ***<1> <5> <9>***
The display shows: "***- - - - - - - - - - -***"
Press now successively the following keys :

for DVD763SA /001 /021 /051 : ***<2><2><2> <0><0><8><0><0>***

Press <***PLAY***> again.
The TV screen will become BLUE during a short time to confirm that the mono board has been reprogrammed.

CL 26532053_056.eps
150502

Figure 5-35 Reprogamming code

5.6.3 Trade Mode

When the player is in Trade Mode, the player cannot be controlled by means of the front key buttons, but only by means of the remote control.

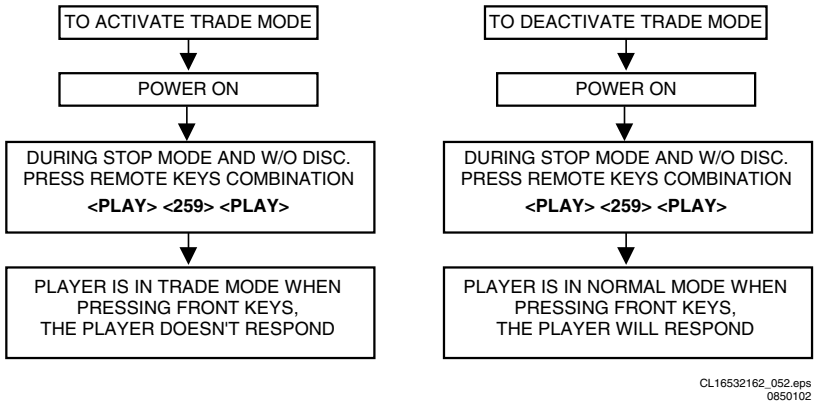


Figure 5-36

Note: To activate and deactivate the Trade Mode with the disc in the player, the procedure is similar to above, except that the remote control keys combination is pressed at the instant when the local display is flashing “READING”

5.7 Menu and Command Mode Interface

5.7.1 Layout of Results Diagnostic Nuclei

Results returned from a Diagnostic Nucleus will be displayed in the following layout:
< number >< string > [ok | ER]

< number >: is a 4-digit decimal number padded with leading zeros if its value is less than 4 digits. The first 2 digits identify the generating nucleus (or group of nuclei) while the latter 2 digits indicate the error number.

< string >: is a text string containing information about the result of the Diagnostic Nucleus.

< number > and < string > are defined in [SSD_DN] in the output sections of each Nucleus.

Examples:
1. 0001Unknown command ER @
2. 3100OK @
3. 0901Data line X is not connected to the DRAM ER@

5.7.2 Command Mode Interface

Set-up Physical Interface Components
Hardware required:
- Service PC
- one free COM port on the Service PC
- special cable to connect DVD player to Service PC

The service PC must have a terminal emulation program (e.g. OS2 WarpTerminal or Procomm) installed and must have a free COM port (e.g. COM1). Activate the terminal emulation program and check that the port settings for the free COM port are: 19200 bps, 8 data bits, no parity, 1 stop bit and no flow control. The free COM port must be connected via a special cable to the RS232 port of the DVD player. This special cable will also connect the test pin, which is available on the connector, to ground (i.e. activate test pin).
Code number of PC interface cable: 3122 785 90017

Activation
Switch the player on and the following text will appear on the screen of the terminal (program):

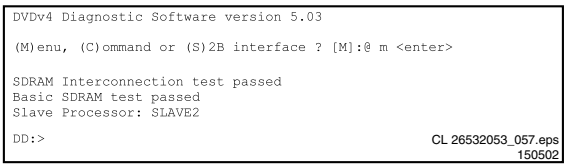


Figure 5-37

The first line indicates that the Diagnostic software has been activated and contains the version number. The second line lets the user choose the interface format. Enter ‘C’ to select Command Mode and the next three lines are the successful result of the two subsequent basic tests (nuclei 2, ,4 and the detection of the display type used by the panel respectively). If not all these messages appear on the terminal screen, then the related nucleus found an error. The last line is the prompt ("DD>"). The diagnostic software is now ready to receive commands.

Command Overview of Nuclei
The following table gives an overview of all available nuclei. The first column contains an identification number, the second contains the name of a nucleus and the last column indicate the description of the nucleus.

Note: User confirmation is necessary during front panel tests

Table 5-1 Basic diagnostic nuclei

Ref. #	Reference Name	Remark
1	BasicSpAcc	Serial port Access test/ initialization
2a	BasicInterconDram	Data and address bus Interconnection (only for development)
2b	BasicInterconSdram	Data and address bus interconnection
3	BasicDramWrR	DRAM Write Read (only for development)
4	BasicSdramWrR	SDRAM Write Read

Table 5-2 Processor and peripherals

Ref. #	Reference Name	Remark
6	PapChksFl	Checksum FLASH
7a	PapUclkAclkCdda	uClock A_CLK in CD-DA mode
7b	PapUclkAclkDvd	uClock A_CLK in DVD mode
7c	PapUclkAclkDvd96	uClock A_CLK in DVD (96kHz) mode
10	PapFlashWrAcc	FLASH Write Access (only for development)
11	PapI2cNvram	I2C NVRAM access
12	PapI2cDisp	I2C Display PWB
13	PapS2bEcho	S2B Echo
14	PapS2bPass	S2B Pass-through
15	PapNvramWrR	NVRAM Write Read
62	PapChksSum	Show checksums stored in flash

Table 5-3 Components

Ref. #	Reference Name	Remark
16	CompSdramWrR	SDRAM Write Read

Table 5-4 Audio

Ref. #	Reference Name	Remark
19a	AudioMuteOn	Audio Mute On
19b	AudioMuteOff	Audio Mute Off
20a	AudioPinkNoiseOn	Audio Pinknoise On
20b	AudioPinkNoiseOff	Audio Pinknoise (or beep tone) Off
20c	AudioBeepToneOn	Audio Beep Tone On
21a	AudioSineOn	Audio Sine signal On/Off
21b	AudioSineBurst	Audio Sine signal Burst
56a	AudioLfePortHigh	Set the LFE_SEL port to HIGH
56b	AudioLfePortLow	Set the LFE_SEL port to LOW
65	DAC_I2C	Resets DAC and check I2C communication with DAC
66a	DAC_I2CEnable	Enable I2C communication to AV board
66b	DAC_I2CDisable	Disable I2C communication to AV board
67a	DAC_ClockInternal	Uses internal clock from monoboard for DAC (256fs)
67b	DAC_ClockExternal	Uses external clock for DAC (384fs)
68a	DAC_AudioPreMuteOn	Enable Audio Pre-mute pin
68b	DAC_AudioPreMuteOff	Disable Audio Pre-mute pin
69a	DAC_CenterOn	Enable Center on pin
69b	DAC_CenterOff	Disable Center on pin
79	DAC_Reset	Resets DAC
80a	DAC_ModeCDDA	Sets DAC to CDDA mode
80b	DAC_ModeDVD48	Sets DAC to DVD mode (48kHz)
80c	DAC_ModeDVD96	Sets DAC to DVD mode (96kHz)
80d	DAC_ModeDSD	Sets DAC to DSD mode
81a	DAC_LowPowerStandbyOn	Enable Low Power Standby
81b	DAC_LowPowerStandbyOff	Disable Low Power Standby
82a	DAC_UpsamplingFreq192k	Sets Upsampling frequency to 192kHz
82b	DAC_UpsamplingFreq96k	Sets Upsampling frequency to 96kHz
82c	DAC_UpsamplingOn	Enable upsampling
82d	DAC_UpsamplingOff	Disable upsampling

Table 5-5 Video

Ref. #	Reference Name	Remark
17a	VidPortOutAA	Output the value 0XAA at the Digital Video Interface Port
17b	VidPortOut55	Output the value 0X55 at the Digital Video Interface Port
23a	VideoColDencOnPAL	Colourbar (PAL) DENC On
23b	VideoColDencOff	Colourbar DENC Off
23c	VideoColDencOnNTSC	Colourbar (NTSC) DENC On
24a	VideoProgMPEGon	Progressive - DigitalVideo Colour Bar ON
24b	VideoYuvMPEGon	Enhanced YUV-DigitalVideo Colour Bar
25a	VideoScartLo	Scart Low
25b	VideoScartMi	Scart Medium
25c	VideoScartHi	Scart High
54	VideoScartSwComm	Scart Switch communication
55a	VideoScartSwDvd	Scart Switch Dvd
55b	VideoScartSwPass	Scart Switch Pass-through
57a	VideoScartPinLo	PIO-pins as used in 2A for Scart-switching
57b	VideoScartPinMi	PIO-pins as used in 2A for Scart-switching
57c	VideoScartPinHi	PIO-pins as used in 2A for Scart-switching
61a	VideoColOutRGB (ST5508)	Output RGB from ST5508
61b	VideoColOutYUV (ST5508)	Output YUV from ST5508

Table 5-6 Display (slave processor)

Ref. #	Reference Name	Remark
26	DispVer	Version number
27	DispKeyb	Keyboard
28	DispRc	Remote Control
29	DispLed	LEDs
30a	DispDisplay	VFT Display test
30b	DispLCDisplay	LCD Display test
30c	DispLCDBkLight	LCD Backlight test
60	DispP50	P50 loopback test

Table 5-7 Log (Error logging in Nvram)

Ref. #	Reference Name	Remark
31	LogReadErr	Read last Errors
32	LogReadBits	Read errors Bits
33	LogReset	Reset

Table 5-8 Miscellaneous

Ref. #	Reference Name	Remark
34	MiscReadConfig	Read Configuration area from NVRAM
35	MiscNvramReset	NVRAM Reset
36	MiscNvramMod	Modify NVRAM contents
46	MiscApplVer	Read version of application software
47a	MiscTrayOpenNr	Read the number of times the tray opened
47b	MiscPowerOnTime	Read the total time the player's power has been on
47c	MiscPlayTimeCddaVcd	Read the Playtime of CDDA and VCD discs
47d	MiscPlayTimeDvd	Read the Playtime of DVD discs

Table 5-9 Basic engine

Ref. #	Reference Name	Remark
37	BeVer	Version number
38a	BeFocusOn	Focus On
38b	BeFocusOff	Focus Off
39a	BeDiscmotorOn	Discmotor On
39b	BeDiscmotorOff	Discmotor Off
40a	BeRadialOn	Radial control On
40b	BeRadialOff	Radial control Off
41a	BeSledgeIn	Sledge Inwards
41b	BeSledgeOut	Sledge Outwards
42a	BeGroovesIn	jump Grooves to Inside
42b	BeGroovesMid	jump Grooves to Middle
42c	BeGroovesOut	jump Grooves to Outside
43a	BeTrayIn	Tray In
43b	BeTrayOut	Tray Out
44	BeReset	Reset Basic Engine
58a	LaserCdOn	CD Laser on
58b	LaserCdOff	CD Laser off
58c	LaserDvdOn	DVD Laser on
58d	LaserDvdOff	DVD Laser off
70	BedReadFlashID	Read flash memory manufacturer and device ID
71	BedCalcRomChksum	Calculate ROM checksum
72	BedScratchTest	Test scratch detection circuit

Table 5-10 Furore IC

Ref. #	Reference Name	Remark
62	Furore_SdramWrR	Furore SDRAM Write Read test
63	Furore_SdramWrR Fast	Furore SDRAM interconnection test
64	Furore_Id	Furore version ID check
83	Furore_Reset	Furore reset
84a	Furore_High	Sets Furore output pins DSD_PCM0-9 to high
84b	Furore_Low	Sets Furore output pins DSD_PCM0-9 to low

Table 5-11 Karaoke (not available)

Ref. #	Reference Name	Remark
48a	KaraokeModeOff	Switch Karaoke mode off
48b	KaraokeModeOn	Switch Karaoke mode on
49	KaraokeMicInput	Check path from the microphone input to audio output
50a	KaraokeKeyOn	Set Karaoke Key to the maximum level (1200 cent)
50b	KaraokeKeyOff	Set Karaoke Key to flat octave (0 cent)
51a	KaraokeEchoOn	Set Echo Control fuction on
51b	KaraokeEchoOff	Set Echo Control function off

5.7.3 Menu Mode Interface

Activation

Switch the player on and the following text will appear on the screen of the terminal (program):

```
DVDv4 Diagnostic Software version 5.03


(M)enu, (C)ommand or (S)2B interface ? [M]:@ <enter>
SDRAM Interconnection test passed
Basic SDRAM test passed
Slave Processor: SLAVE2



Press ENTER to go to main menu
CC: > <enter>

MAIN MENU

1. Audio ...
2. Video ...
3. Front Panel ...
4. Basic Engine ...
5. Processor Peripherals ...
6. Error Log ...
7. Miscellaneous ...

Select >
```

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Figure 5-38 Screen menu

The first line indicates that the Diagnostic software has been activated and contains the version number. The next lines are the successful result of the SDRAM interconnection test and the basic SDRAM test. The last line allows the user to choose between the four possible interface forms. If pressing M has made a choice for Menu Interface, the Main Menu will appear.

Layout of Menu and Submenu

The following menu layout will appear after starting up the DVD player in menu mode. The symbol "- - -"" indicates that the current menu choice will invoke the display of a submenu. The number between [ ] idicates the nucleus number. These numbers will not be shown on the screen.

Menus

MAIN MENU

1 Audio...
2 Video...
3 Front Panel...
4 Basic Engine...
5 Processor Peripherals...
6 Error Log...
7 Furore...
8 Miscellaneous...

First Level Submenus

MAIN > AUDIO MENU

1 Mute...
2 Pink Noise...
3 Sine Wave...
4 Digital Ports...
5 Ext. DAC Board...

MAIN > VIDEO MENU

1 Colourbar...
2 Scart...
3 Digital Port...

MAIN > FRONT PANEL MENU

1	Slave Processor...	
2	VFT Display	[30a]
3	LCD Display	[30b]
4	LCD BkLight	[30c]
5	Keyboard	[27]
6	LEDs	[29]
7	Remote Control	[28]
8	P50 Check	[60]

MAIN > BASIC ENGINE MENU
1 Reset [44]
2 Version [37]
3 S2B...
4 Loader Mechanism...
5 Special Diagnostics...

MAIN > PROCESSOR PERIPHERALS MENU
1 Clock...
2 Flash...
3 NVRAM...
4 SDRAM Write/Read [16]

MAIN > ERROR LOG MENU
1 Read Last Errors [31]
2 Read Error Bits [32]
3 Reset Error Log [33]

MAIN > FURORE MENU
1 SDRAM Write/Read [63]
2 SDRAM Write/Read [64]
3 Chip Revision ID [65]
3 Set Output High [84a]
3 Set Output Low [84b]
3 Reset [83]

MAIN > MISCELLANEOUS MENU
1 Statistics Info...
2 Read DVD Application version[46]

Second Level Submenus

MAIN > AUDIO > MUTE MENU
1 Mute On [19a]
2 Mute Off [19b]

MAIN > AUDIO > PINK NOISE MENU
1 Pink Noise On [20a]
2 Pink Noise / Beep Tone Off [20b]
3 Beep Tone On [20c]

MAIN > AUDIO > SINE WAVE MENU
1 Audio Sine On [21a]
2 Audio Burst On [21b]

MAIN > AUDIO > DIGITAL PORTS MENU
1 LFE_SEL High [56a]
2 LFE_SEL Low [56b]

MAIN > AUDIO > EXT DAC BOARD MENU
1. DAC Reset [79]
2. I2C Test...
3. Clock...
4. Audio...
5. Low Power Standby...
6. DAC Mode...

MAIN > VIDEO > COLOURBAR MENU
1 Colourbar DENC On (PAL) [23a]
2 Colourbar DENC On (NTSC) [23c]
3 Colourbar DENC/MPEG Off [23b]
4 ProgressiveScan MPEG On [24a]
5 Enhanced YUV MPEG On [24b]
6 Set Video Out To RGB [61a]
7 Set Video Out To YUV [61b]

MAIN > VIDEO > SCART MENU
1 I2C Scart IC Check [54]
2 Scart To DVD [55a]
3 Scart Pass Through [55b]
4 Scart Pin 8 Low (0 to 2)V [25a]
5 Scart Pin 8 Mid (4.5 to 7)V [25b]
6 Scart Pin 8 Hi(9.5 to 12)V [25c]

MAIN > VIDEO > DIGITAL PORT MENU
1 Video Port Out 0xAA [17a]
2 Video Port Out 0x55 [17b]

MAIN > FRONT PANEL > SLAVE PROCESSOR MENU
1 Bus Comms Check [12]
2 S/W Version [26]

MAIN > BASIC ENGINE > S2B MENU
1 S2B Echo [13]
2 S2B Pass-Through [14]

MAIN > BASIC ENGINE > MECHANISM MENU
1 Disc Motor...
2 Laser...
3 Tray...
4 Focus...
5 Radial...
6 Sledge...
7 Grooves...

MAIN > BASIC ENGINE > SPECIAL DIAGNOSTICS MENU
1 Read FlashID [70]
2 ROM Checksum [71]
3 Scratch Detector Test [72]

MAIN > PROCESSOR PERIPHERALS > PCM CLOCK MENU
1 PCM_CLK In CDDA Mode (11.3MHz) [8a]
2 PCM_CLK In DVD Mode (12.3MHz) [8b]
3 PCM_CLK In DVD96kHz Mode (24.6MHz) [8c]

MAIN > PROCESSOR PERIPHERALS > FLASH MENU
1 Verify FLASH Checksum [6]
2 Show FLASH Checksum [62]

MAIN > PROCESSOR PERIPHERALS > NVRAM MENU
1 I2C NVRAM Acces [11]
2 NVRAM Config [34]
3 NVRAM Reset [35]
4 NVRAM Modify [36]
5 NVRAM Read/Wr Test [15]

MAIN > MISCELLANEOUS > STATISTICS INFO MENU
1Total Nr Of Times Tray Open[47a]
2 Total Time Power On [47b]
3 Total Play-Time CDDA & VCD [47c]
4 Total Play-Time DVD [47d]

Third Level Submenus

MAIN > AUDIO > EXT DAC BOARD > I2C TEST MENU
1. I2C Test [66a]
2. I2C Enable Pin On [66b]
3. I2C Enable Pin Off [66c]

MAIN > AUDIO > EXT DAC BOARD > CLOCK MENU
1. Clock Internal [67a]
2. Clock External [67b]
3. Clock Upsampling 192k (963 only) [82a]
4. Clock Upsampling 96k (963 only) [82b]
5. Clock Upsampling On (963 only) [82c]
6. Clock Upsampling Off (963 only) [82d]

MAIN > AUDIO > EXT DAC BOARD > AUDIO
1. Audio Pre-Mute On [68a]
2. Audio Pre-Mute Off [68b]
3. Audio Center On [69a]
4. Audio Center Off [69b]

MAIN > AUDIO > EXT DAC BOARD > LOW POWER STANDBY

1. Low Power Standby On [81a]
2. Low Power Standby Off [81b]

MAIN > AUDIO > EXT DAC BOARD > DAC MODE MENU

1. DAC CDDA Mode [80a]
2. DAC DVD48 Mode [80b]
3. DAC DVD96 Mode [80c]
4. DAC DSD Mode [80d

MAIN > BASIC ENGINE > MECHANISM > DISC MOTOR MENU

1 Disc Motor On [39a]
2 Disc Motor Off [39b]

MAIN > BASIC ENGINE > MECHANISM > LASER MENU

1 CD Laser On [58a]
2 CD Laser Off [58b]
3 DVD Laser On [58c]
4 DVD Laser Off [58d]

MAIN > BASIC ENGINE > MECHANISM > TRAY MENU

1 Tray Open [43b]
2 Tray Close [43a]

MAIN > BASIC ENGINE > MECHANISM > FOCUS MENU

1 Focus On [38a] (load DVD first)
2 Focus Off [38b]

MAIN > BASIC ENGINE > MECHANISM > RADIAL MENU

1 Radial Control On [40a] (load DVD first)
2 Radial Control Off [40b]

MAIN > BASIC ENGINE > MECHANISM > SLEDGE MENU

1 Sledge Inwards [41a]
2 Sledge Outwards [41b]

MAIN > BASIC ENGINE > MECHANISM > GROOVES (Uses DVD) MENU

1 Jump To Inside Grooves [42a]
2 Jump To Middle Grooves [42b]
3 Jump To Outside Grooves [42c]

5.8 Nuclei Error Codes

In the following tables the error description of the error codes will be described.

5.8.1 Audio Nuclei

Error code	Error text
1880	Test successful
1800	Test successful
1900	Test successful
1920	Test successful
2000	Test successful
2020	Test successful
2100	Test successful
5600	Test successful
5620	Test successful
7900	"Checksums = 0xA1, 0xB1, 0xC1, 0xD1"
7901	"DAC I2C bus busy"
7902	"DAC I2C expander "
8000	"Test successful"
8001	"DAC mode CDDA I2C bus busy before start"
8002	"DAC mode CDDA I2C connection failed"
8020	"Test successful"
8021	"DAC mode DVD48 I2C bus busy before start"
8022	"DAC mode DVD48 I2C connection failed"
8040	"Test successful"
8041	"DAC mode DVD96 I2C bus busy before start"
8042	"DAC mode DVD96 I2C connection failed"
8060	"Test successful"
8061	"DAC mode DSD I2C bus busy before start"
8062	"DAC mode DSD I2C connection failed"
8100	"Test successful"
8101	"Low Power Standby On I2C bus busy"
8102	"Low Power Standby On I2C connection failed"
8120	"Test successful"
8121	"Low Power Standby Off I2C bus busy"
8122	"Low Power Standby Off I2C connection failed"
8200	"Test successful"
8201	"DAC Upsample 192k I2C bus busy"
8202	"DAC Upsample 192k I2C connection failed"
8220	"Test successful"
8221	"DAC Upsample 96k I2C bus busy"
8222	"DAC Upsample 96k I2C connection failed"
8200	"Test successful"
8201	"DAC UpSample On bus busy"
8202	"DAC UpSample On I2C connection failed"
8200	"Test successful"
8201	"DAC UpSample Off bus busy"
8202	"DAC UpSample Off I2C connection failed"

5.8.2 Basic Engine Nuclei

Error code	Error text
3900	Test successful
3901	“Parity error from Basic Engine to Serial”
3902	“Unexpected response from Basic Engine”
3903	“Communication time-out error”
3904	“Basic Engine returned error number 0xXX”
3921	“Parity error from Basic Engine to Serial”
3922	“Unexpected response from Basic Engine”
3923	“Communication time-out error”
3924	“Basic Engine returned error number 0xXX”
3800	Test successful
3801	“Parity error from Basic Engine to Serial”
3802	“Unexpected response from Basic Engine”
3803	“Communication time-out error”
3804	“Basic Engine returned error number 0xXX”
3805	“Focus loop could not be closed”
3820	Test successful
3821	“Parity error from Basic Engine to Serial”
3822	“Unexpected response from Basic Engine”
3823	“Communication time-out error”
3824	“Basic Engine returned error number 0xXX”
4200	Test successful
4201	“Parity error from Basic Engine to Serial”
4202	“Unexpected response from Basic Engine”
4203	“Communication time-out error”
4204	“Basic Engine returned error number 0xXX”
4205	“Sledge could not be moved to home position”
4206	“Focus loop could not be closed”
4207	“Motor not on speed within time-out”
4208	“Radial loop could not be closed”
4209	“PLL could not lock in accessing or tracking state”
4210	“Subcode or sector information could not be read”
4211	“Requested subcode item could not be found”
4212	“TOC could not be read in time”
4213	“Seek could not be performed”
4220	Test successful
4221	“Parity error from Basic Engine to Serial”
4222	“Unexpected response from Basic Engine”
4223	“Communication time-out error”
4224	“Basic Engine returned error number 0xXX”
4225	“Sledge could not be moved to home position”
4226	“Focus loop could not be closed”
4227	“Motor not on speed within time-out”
4228	“Radial loop could not be closed”
4229	“PLL could not lock in accessing or tracking state”
4230	“Subcode or sector information could not be read”
4231	“Requested subcode item could not be found”
4232	“TOC could not be read in time”
4233	“Seek could not be performed”
4240	Test successful
4241	“Parity error from Basic Engine to Serial”
4242	“Unexpected response from Basic Engine”
4243	“Communication time-out error”
4244	“Basic Engine returned error number 0xXX”
4245	“Sledge could not be moved to home position”
4246	“Focus loop could not be closed”
4247	“Motor not on speed within time-out”
4248	“Radial loop could not be closed”
4249	“PLL could not lock in accessing or tracking state”
4250	“Subcode or sector information could not be read”
4251	“Requested subcode item could not be found”
4252	“TOC could not be read in time”
4253	“Seek could not be performed”
4000	Test successful
4001	“Parity error from Basic Engine to Serial”
4002	“Unexpected response from Basic Engine”
4003	“Communication time-out error”
4004	“Basic Engine returned error number 0xXX”
4005	“Radial loop could not be closed”
4020	Test successful
4021	“Parity error from Basic Engine to Serial”
4022	“Unexpected response from Basic Engine”
4023	“Communication time-out error”
4024	“Basic Engine returned error number 0xXX”
4400	Test successful
4401	Test successful
4100	Test successful
4101	“Parity error from Basic Engine to Serial”
4102	“Unexpected response from Basic Engine”
4103	“Communication time-out error”
4104	“Basic Engine returned error number XX”
4120	Test successful
4121	“Parity error from Basic Engine to Serial”
4122	“Unexpected response from Basic Engine”
4123	“Communication time-out error”
4124	“Basic Engine returned error number XX”
4300	Test successful
4301	“Parity error from Basic Engine to Serial”
4302	“Unexpected response from Basic Engine”
4303	“Communication time-out error”
4304	“Basic Engine returned error number 0xXX”
4320	Test successful
4321	“Parity error from Basic Engine to Serial”
4322	“Unexpected response from Basic Engine”
4323	“Communication time-out error”
4324	“Basic Engine returned error number 0xXX”
3700	“Version: X.Y.Z”
3701	“Parity error from Basic Engine to Serial”
3702	“Unexpected response from Basic Engine”
3703	“Communication time-out error”
3704	“Basic Engine returned error number 0xXX”
5800	Test successful

Error code	Error text
5820	Test successful
5840	Test successful
5860	Test successful
5801	"Unexpected response from Basic Engine"
7000	"Manuf. ID: <XX>" "Device ID: <YY>"
7001	"Comm Test Failed"
7002	"Load Cmd Failed"
7003	"Load Dat Failed"
7004	"Run Cmd Failed"
7100	"ROM Checksum: XXXX"
7101	"Comm Test Failed"
7102	"Load Cmd Failed"
7103	"Load Dat Failed"
7104	"Run Cmd Failed"
7201	"Comm Test Failed"
7200	"Test successful"
7202	"Load Cmd Failed"
7203	"Load Dat Failed"
7204	"Run Cmd Failed"
7205	"Scratch circuit not OK"

5.8.3 Display PWB Nuclei

Error code	Error text
3000	“Test successful”
3001	“Disp not responding”
3002	“Disp key no response”
3003	“One or more patterns not correct”
3004	“Disp type invalid”
3020	“Test successful”
3021	“Disp not responding”
3022	“Disp key no response”
3023	“One or more patterns not correct”
3040	“Test successful”
3041	“Disp not responding”
3042	“Disp key no response”
3043	“One or more patterns not correct”
2700	“Model name in wich the test is running”
2701	“Disp key no response”
2702	“Disp not responding”
2707	“Stop key not pressed”
2708	“Pause key not pressed”
2709	“Play key not pressed”
2710	“Open/close key not pressed”
2713	“Previous key not pressed”
2714	“Next key not pressed”
2715	“More than one key not pressed”
2716	" Audio key not pressed"
2900	“Test successful”
2901	“Slave not responding”
2902	“Slave keyboard not responding”
2903	“Standby led not working”
2800	“Test successful”
2801	“Slave display controller not responding”
2802	“Slave keyboard not responding”
2803	“No key press received from remote control”

Error code	Error text
2600	“The ROM version of the slave processor = 0xXX, and the internal ID = 0xYY”
2601	“I2c bus busy”
2602	“I2c bus not working“
6000	P50 test
6001	“No readback on P50”
6002	“Disp not responding “
6003	“P50 readback error”

5.8.4 Processor & Peripherals Nuclei

Error code	Error text
700	Test successful
720	Test successful
740	Test successful
600	"All checksums are correct"
601	“Following checksum is faulty: BootCode1 Checksum is 0xY2 and is not correct (must be 0xZ2)”
601	“This test is not available when stand-alone compiled”
6200	"Checksums = 0xA1, 0xB1, 0xC1, 0xD1"
6201	“This test is not available when stand-alone compiled”
1000	Test successful
1001	Test successful
1020	Test successful
1021	Test successful
1100	Test successful
1104	“NVRAM reply time-out”
1200	Test successful
1202	“Slave bus not working”
1203	“Slave controller not responding”
1204	“Slave response is not correct”
5900	Test successful
5901	“I2c bus busy”
5902	“I2c bus not working“
5904	“DTS chip response not correct”
1300	Test successful
1301	“Parity error from basic engine to serial”
1302	“Parity error from serial to basic engine”
1303	“No communication between serial and basic engine”
1304	“Communication time-out error”
1600	Test successful
1601	“The DVD SDRAM is faulty”

5.8.5 Log Nuclei

Error code	Error text
3100	"Show error log"
3101	"Error log is invalid"
3102	"Error log could not be read from NVRAM"
3103	"I2C bus busy before start"
3200	"Show error bit"
3201	"Error log is invalid"
3202	"I2C bus busy before start"
3203	"Error log could not be read from NVRAM"
3300	"Error log is cleared"
3301	"Error log could not be cleared"
3302	"I2C bus busy before start"

5.8.6 Miscellaneous Nuclei

Error code	Error text
3400	Test successful
3401	"The configuration data could not be read from NVRAM"
3402	"I2C bus busy before start"
3500	"NVRAM is cleared"
3501	"The NVRAM could not be reset."
3502	"I2C bus busy before start"
3600	"NVRAM contents updated."
	"NVRAM contents and configuration checksum updated."
3601	"NVRAM contents could not be updated."
3602	"I2C bus busy before start"
3603	"NVRAM contents could not be read"
3604	"NVRAM not accessible."
3605	"NVRAM checksum could not be updated."
1500	Test successful
1502	"NVRAM access time-out"
1504	"NVRAM fails"
5400	Test successful
5401	"I2c bus busy"
5402	"I2c bus not working"
5403	"Scart switch controller not responding"
5404	"Scart switch controller response not correct"
5500	Test successful
5501	"I2c bus busy"
5502	"I2c bus not working"
5520	Test successful
5521	"I2c bus busy"
5522	"I2c bus not working"
5523	"Scart switch controller not responding"
5200	Test successful
5201	"I2c bus busy"
5202	"I2c bus not working"
5300	Test successful
5301	"I2c bus busy"
5302	"I2c bus not working"
5320	Test successful
5321	"I2c bus busy"
5322	"I2c bus not working"
4700	"Number of times Tray went Open : XX"
4701	The total number of times tray went open could not be read from NVRAM.
4702	I2C bus busy before start
4720	"Total Power On time (minutes) : XX"
4721	The total power-on time could not be read from NVRAM.
4722	I2C bus busy before start
4740	"Total CDDA & VCD disks Play-time (minutes) : XX"
4741	The playtime of CDDA & VCD disks could not be read from NVRAM.
4742	I2C bus busy before start
4760	"Total DVD disks Play-time (minutes) : XX"
4761	The playtime of DVD disks could not be read from NVRAM.
4762	I2C bus busy before start
4600	"Version of Application Software : XX"
4601	"The application version could not be read from NVRAM."
4602	"I2C bus busy before start"

5.8.7 Video Nuclei

Error code	Error text
2300	Test successful
2320	Test successful
2340	Test successful
2400	Test successful
2401	"I2c bus busy"
2421	"I2c bus busy"
2441	"I2c bus busy"
2500	Test successful
2501	"I2c bus busy"
2502	"I2c bus not working"
2520	Test successful
2521	"I2c bus busy"
2522	"I2c bus not working"
2540	Test successful
2541	"I2c bus busy"
2542	"I2c bus not working"
6100	Test successful
6100	Test successful

5.8.8 Furore Nuclei

Error code	Error text
8300	"Test successful"
8301	"Invalid Version ID read. "
8400	"Test successful"
8420	"Test successful"

5.9 Test Instruction Front Display and Audio/ Video Board

These test instruction is designed specifically for SACD 2002 single disc models which has the following outputs:

- 6 Channel Audio output
- Coaxial / Optical digital output
- CVBS
- Component output YUV
- SVHS
- Double SCART output
- Front Display

5.9.1 General

- All the waveforms measurement carried out in these test instruction will be base on the testpoint indicated in the A/V Board and Front Display schematic diagram in the Service manual.
- Impedance of the measuring-equipment should be > 1MΩ
- Most of the tests can be done using either the Diagnostic software " Player script" which can be found in the chapter "Diagnostic Software description and troubleshooting" or the Menu interface using the Service PC with a terminal emulation program (e.g. Window Hyperterminal) where it is possible to control the execution of the Diagnostic Nuclei
- Setup for the measurement will be done in set level with all modules connected as shown in the Wiring Block diagram.

5.9.2 General Start-Up Measurement

Supply Check:
Before starting the measurement,ensure that all power supply are connected to the A/V and Front Display board via conn.1420 and 1127 respectively.

Pin nr.	A/V Board	Front Display
Voltage	Conn. 1420	Conn. 1127
1	+3V3_Power	-
2	+3V3_Power	-
3	GND	-
4	+12V_Power	-
5	+12VSTBY	-
6	GND	+5VSTBY
7	+5VSTBY	+12V_Power
8	GND	-32V_Power
9	-12V_Power	-
10	GND	-
11	-32V_Power	-
12		-

Clock Check
Ensure the present of the clock to the DAC and the slave μP.

Clock Name	Testpoint	Frequency
PCM_CLK	I117	11.2896MHz ± 0.02% tolerance
XOUT	S1	8MHz ± 0.2% tolerance

Audio Mute Check
Measure the Audio mute voltage input at pin 22 of connector 1421

Status	Value
AudioMuteOn	HIGH (>3V)
AudioMuteOff	LOW (<3V)

To toggle between ON and OFF,use the following commands:

Ref.#	Command Name	Remarks
19a	AudioMuteOn	Audio Mute On
19b	AudioMuteOff	Audio Mute Off

5.9.3 Audio DAC And Amplifier

Ensure that the Audio mute signal is OFF
To check the DAC and buffer amplifier,send the following commands.

Ref.#	Command Name	Remarks	Audio output
21a	AudioSineOn	Audio Sine signal ON	Sine,1Khz on stereo
----	Press stop button	Audio Sine signal OFF	No waveform
20a	AudioPinkNoiseOn	Audio Pinknoise ON	Pink Noise on 6 channels
20b	AudioPinkNoiseOff	Audio Pinknoise OFF	No waveform

The audio signal (sine or pink noise) will also be present on the digital output (SPDIF).This can be checked by connecting digital signal to an amplifier with digital input.
Check the I2S and audio signal at the following testpoints:

Name	Testpoint
PCM_LRCLK	I115
PCM_SCLK	I116
PCM_CLK	I117
SDT1	I114
SDT2	I112
SDT3	I110
DIG_OUT	I499
STEREO L/R OUT	I330 / I333
FRONT L/R OUT	I336 / I339
SURROUND L/R OUT	I348 / I351
CENTRE OUT	I345
SUB WOOFER L/R OUT	I342

All waveforms can be refered to the A/V board schematic diagram.

5.9.4 Video Output And Buffer Amplifier

Check DC output-level at all video cinch output : 1.0V DC ± 10%
Generate a color bar using the following software commands:

Ref.#	Command Name	Remarks
23a	VideoColDencOn	Colour DENC ON
23b	VideoColDencOff	Colourbar DENC OFF

Check the video outputs at the following testpoints:

Name	Testpoint
GREEN_Y	I502
BLUE_U	I491
RED_V	I494
CVBS out_Mono	I480
C_Mono	I483
Y_Mono	I482

ll waveforms can be refered to the A/V board schematic diagram.

5.9.5 Play and 16/9 Detection

Check DC voltage at S-VIDEO-CHROMA output (pin 4) with a 6k8 ohm load and SCART connector 1403 (pin 16) and change the SCART0 and SCART1 input using the following commands:

Ref.#	Command Name	Remarks
25a	VideoScartLo	Sends out 0V ± 0.5V
25b	VideoScartMi	Sends out 6V ± 10%

Ref.#	Command Name	Remarks
25c	VideoScartHi	Sends out 12V ± 10%

5.9.6 Kill Circuit

To check the functionality of the Kill circuitry,the audio outputs has to be present by the following command:

Ref.#	Command Name	Remarks	Audio output
21a	AudioSineOn	Audio Sinewave ON	1kHz tone

Check the audio outputs at the audio cinch of the A/V and SCART board: 1kHz tone.

Activate the Kill circuit by using the following command:

Ref.#	Command Name	Remarks
19a	AudioMuteOn	Audio Mute On

Check the audio outputs at the audio L/R cinch and SCART of the A/V and SCART board respectively:
No waveform
Switch off the kill circuit by using the following command:

Ref.#	Command Name	Remarks
19b	AudioMuteOff	Audio Mute Off

Check the audio outputs at the audio L/R cinch and SCART of the A/V and SCART board: 1kHz tone

5.9.7 Digital Silence

Digital silence is a signal from the audio DAC, MFL, when there is no input to the audio DAC, or when the player is in STOP/ PAUSE mode, or during disc changing track.

To check the MFL signal, use the following command and check the voltage level at pin 41 of 7200:

Ref.#	Command Name	Remarks	KILL_LR signal
21a	AudioSineOn	Audio Sinewave ON	LOW (<0.3V)
---	Press STOP button	Audio Sine signal OFF	HIGH (>4.5V)

5.9.8 Front Display

To check the segment display of the FTD, the following command can be used. And for full detail description of the test, refer to the chapter of “Diagnostic Software Player Script” which can be found in chapter “Diagnostic Software Description and Troubleshooting”

Ref.#	Command Name	Remarks
30a	DispDisplay	Turn ON local display

5.9.9 IR Receiver

Check at pin 22 of 7101 and observe if this line switches from LOW (<0.3V) to HIGH (>4.5V) when pressing a key on a philips RC5 or RC6 remote control

5.9.10 P50 Interface

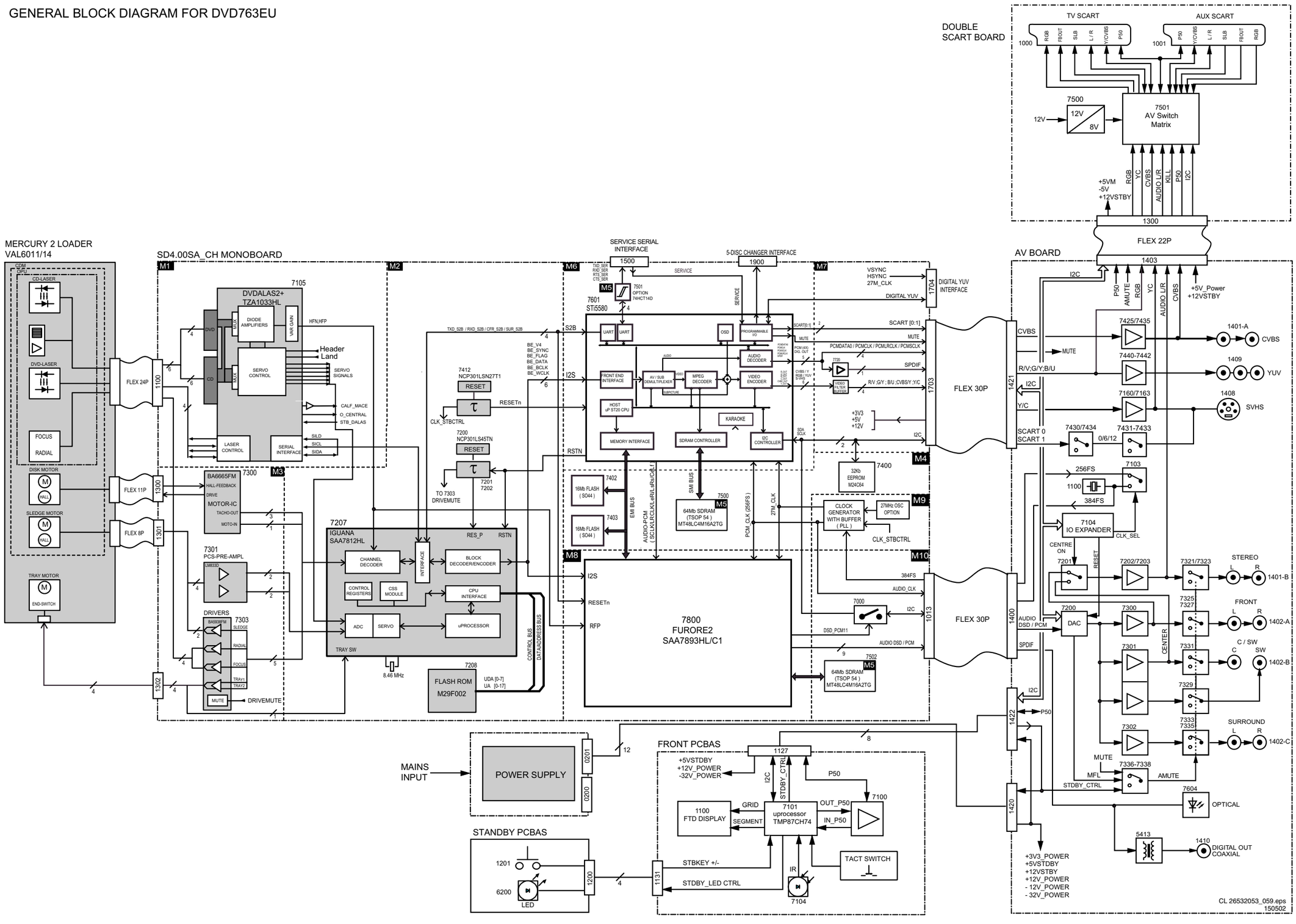
P50 (or Easylink) is a bi-directional serial interface for communication between video equipment. To check for the functionality of the P50 Interface, refer to the chapter of ‘Diagnostic Software Player Script’ for full detail description.

Personal Notes:

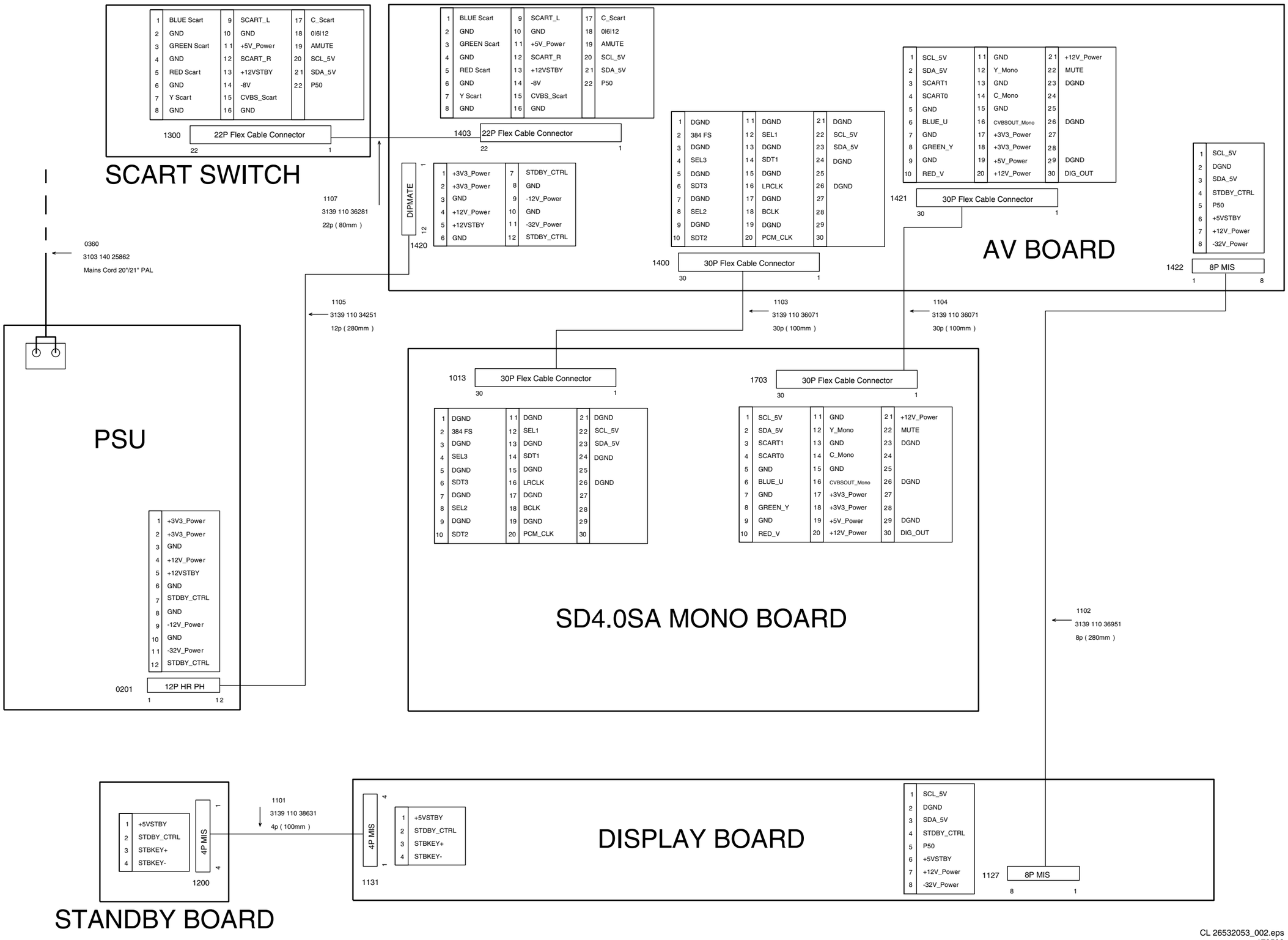
6. Block and Wiring Diagram.

Block Diagram DVD763SA EU

GENERAL BLOCK DIAGRAM FOR DVD763EU



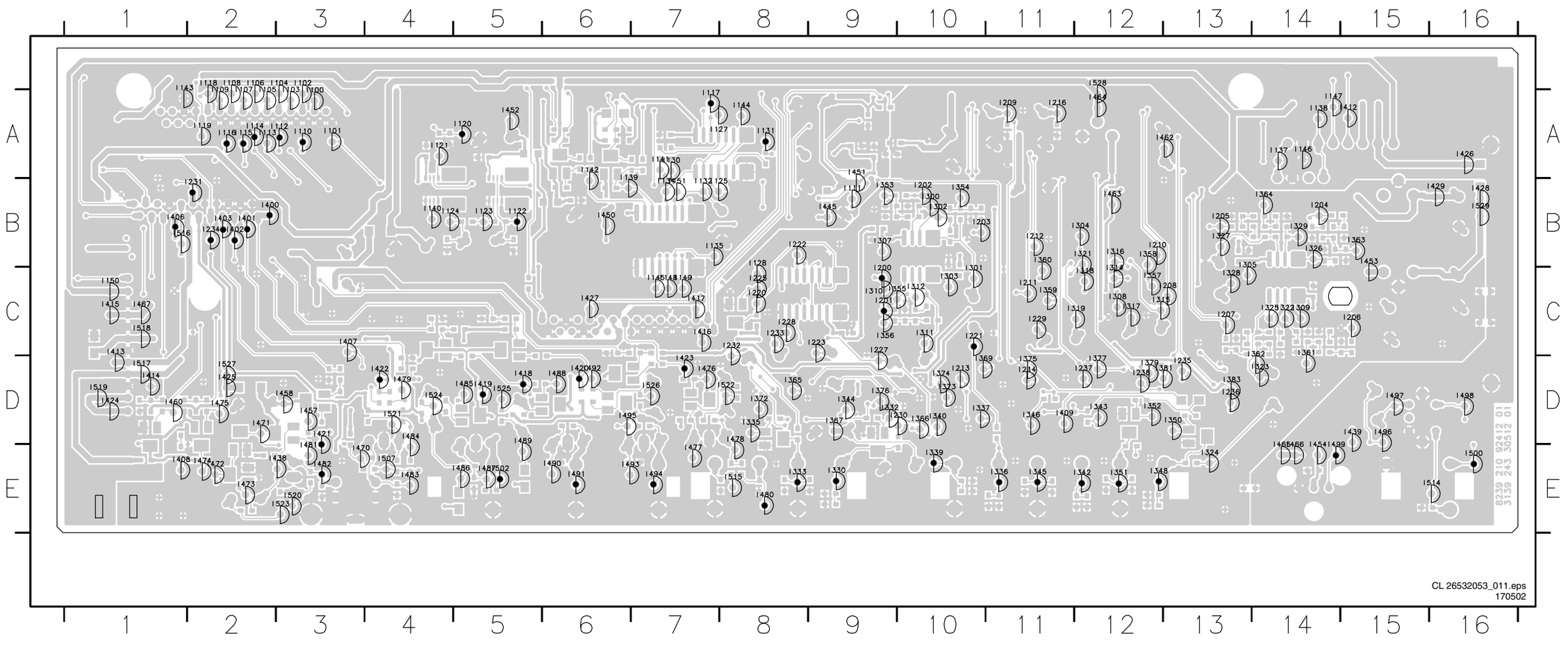
Wiring Diagram DVD763SA EU



CL 26532053_002.eps
170502

AV Board Testpoint Overview

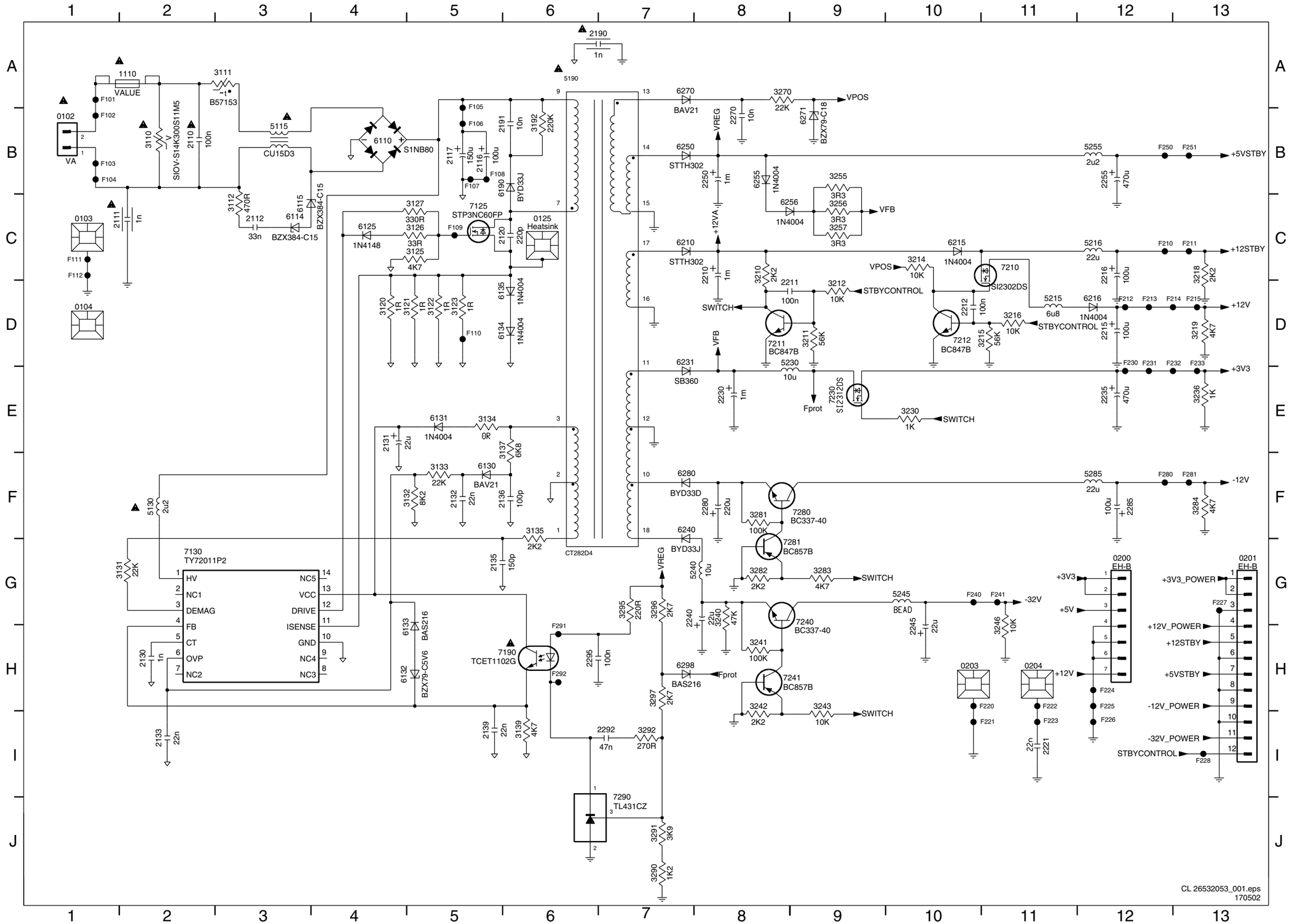
I100 A3	I113 A2	I127 A7	I143 A1	I204 B14	I221 C10	I236 D13	I311 C10	I326 B14	I343 D12	I358 B12	I374 D10	I408 E1	I423 D7	I453 C15	I472 E2	I485 D5	I498 D16
I101 A3	I114 A2	I128 C8	I144 A8	I205 B13	I222 B8	I237 D12	I312 C10	I327 B13	I344 D9	I359 C11	I375 D11	I409 D11	I424 D1	I454 E14	I473 E2	I486 E5	I499 E14
I102 A3	I115 A2	I130 A7	I145 C7	I206 C15	I223 C9	I238 D12	I314 C12	I328 C13	I345 E11	I360 C11	I376 D9	I412 A15	I425 D2	I457 D3	I474 E2	I487 E5	I500 E16
I103 A3	I116 A2	I131 A8	I146 A14	I207 C13	I225 C8	I300 B10	I315 C12	I329 B14	I346 D11	I361 D14	I377 D12	I413 D1	I426 A16	I458 D3	I475 D2	I488 D6	I502 E5
I104 A3	I117 A7	I132 B7	I147 A14	I208 C13	I227 D9	I301 C10	I316 B12	I330 E9	I348 E12	I362 D14	I379 D12	I414 D1	I427 C6	I460 D1	I476 D7	I489 E5	I507 E4
I105 A2	I118 A2	I134 B7	I148 C7	I209 A11	I228 C8	I302 B10	I317 C12	I332 D9	I350 D13	I363 B15	I381 D13	I415 C1	I428 B16	I462 A13	I477 E7	I490 E6	I514 E16
I106 A2	I119 A2	I135 B7	I149 C7	I210 B12	I229 C11	I303 C10	I318 C12	I333 E8	I351 E12	I364 B14	I383 D13	I416 C7	I429 B16	I463 B12	I478 E8	I491 E6	I515 E8
I107 A2	I120 A5	I137 A14	I150 C1	I211 C11	I230 D10	I304 B12	I319 C12	I335 D8	I352 D12	I365 D8	I400 B2	I417 C7	I438 E3	I464 A12	I479 D4	I492 D6	I516 B1
I108 A2	I121 A4	I138 A14	I151 B7	I212 B11	I231 B2	I305 C13	I321 B12	I336 E11	I353 B9	I366 D10	I401 B2	I418 D5	I439 D15	I465 E14	I480 E8	I493 E6	I517 D1
I109 A2	I122 B5	I139 B6	I200 C9	I213 D10	I232 D8	I307 B9	I322 C14	I337 D10	I354 B10	I367 D9	I402 B2	I419 D5	I445 B9	I466 E14	I481 E3	I494 E7	I518 C1
I110 A3	I123 B5	I140 B4	I201 C9	I214 D11	I233 C8	I308 C12	I323 D14	I339 E10	I355 C9	I369 D10	I403 B2	I420 D6	I450 B6	I467 C1	I482 E3	I495 D6	I519 D1
I111 B9	I124 B4	I141 A7	I202 B10	I216 A11	I234 B2	I309 C14	I324 E13	I340 D10	I356 C9	I372 D8	I406 B1	I421 E3	I451 B9	I470 E3	I483 E4	I496 D15	I520 E3
I112 A3	I125 B7	I142 B6	I203 B10	I220 C8	I235 D13	I310 C9	I325 C14	I342 E12	I357 C12	I373 D10	I407 C3	I422 D4	I452 A5	I471 D2	I484 E4	I497 D15	I521 D4



CL 26532053_011.eps
170502

7. Electrical Diagrams

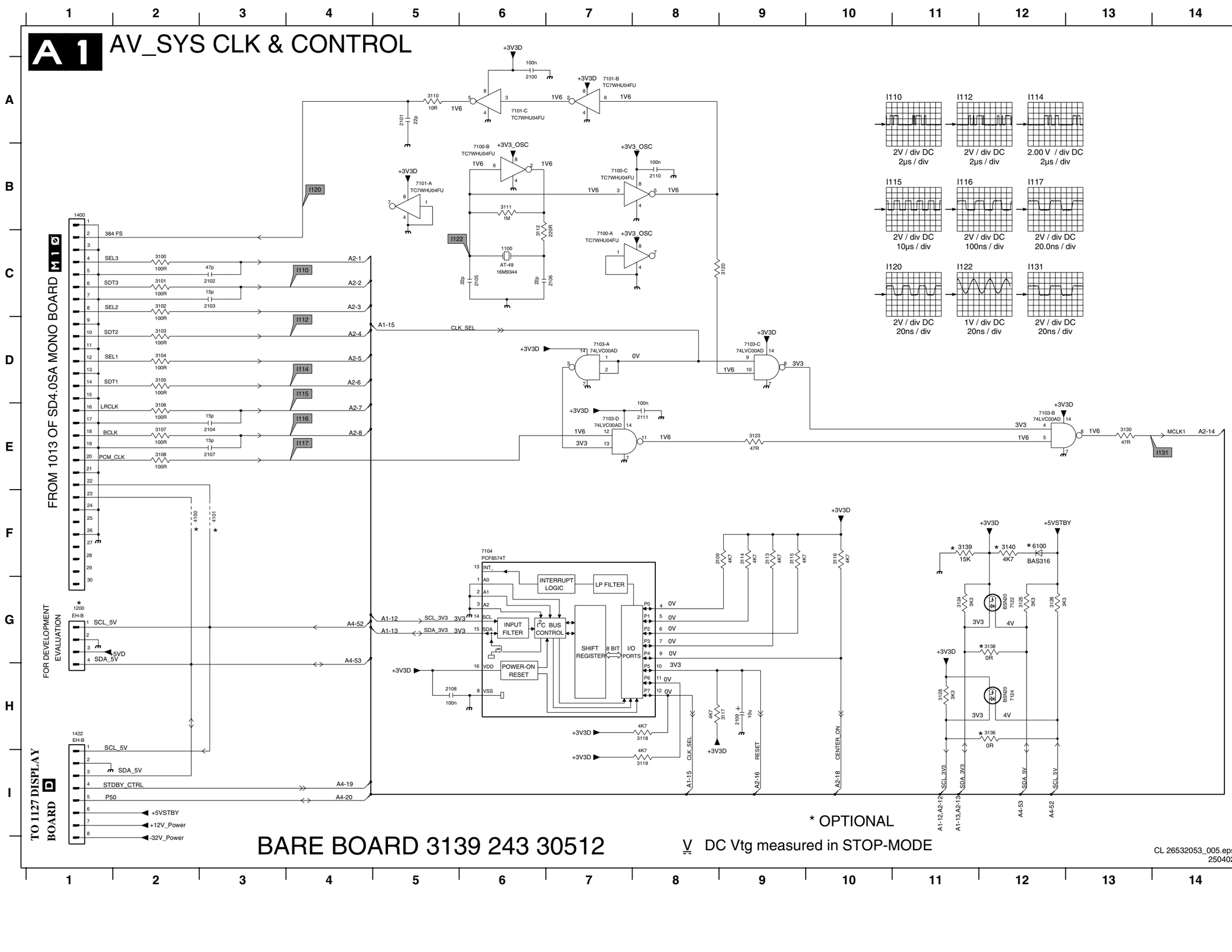
Power Supply Unit DVD763SA EU



AV-Board: Clock & Control

A 1 AV_SYS CLK & CONTROL

1100 C6
1200 G1
1400 B1
1422 H1
2100 A6
2101 A5
2102 C3
2103 C3
2104 E3
2105 C6
2106 C7
2107 E3
2108 H5
2109 H9
2110 B8
2111 E8
3100 C2
3101 C2
3102 C2
3103 D2
3104 D2
3105 D2
3106 E2
3107 E2
3108 E2
3109 F9
3110 A5
3111 B6
3112 C6
3113 F9
3114 F9
3115 F9
3116 F10
3117 H9
3118 H8
3119 I8
3120 C9
3123 E9
3124 G11
3125 G12
3126 G12
3128 H11
3130 E13
3136 H12
3138 G12
3139 F11
3140 F12
4100 F2
4101 F2
6100 F12
7100-A C7
7100-B B6
7100-C B7
7101-A B5
7101-B A7
7101-C A6
7103-A D7
7103-B E12
7103-C D9
7103-D E7
7104 F6
7122 G12
7124 H12



* OPTIONAL

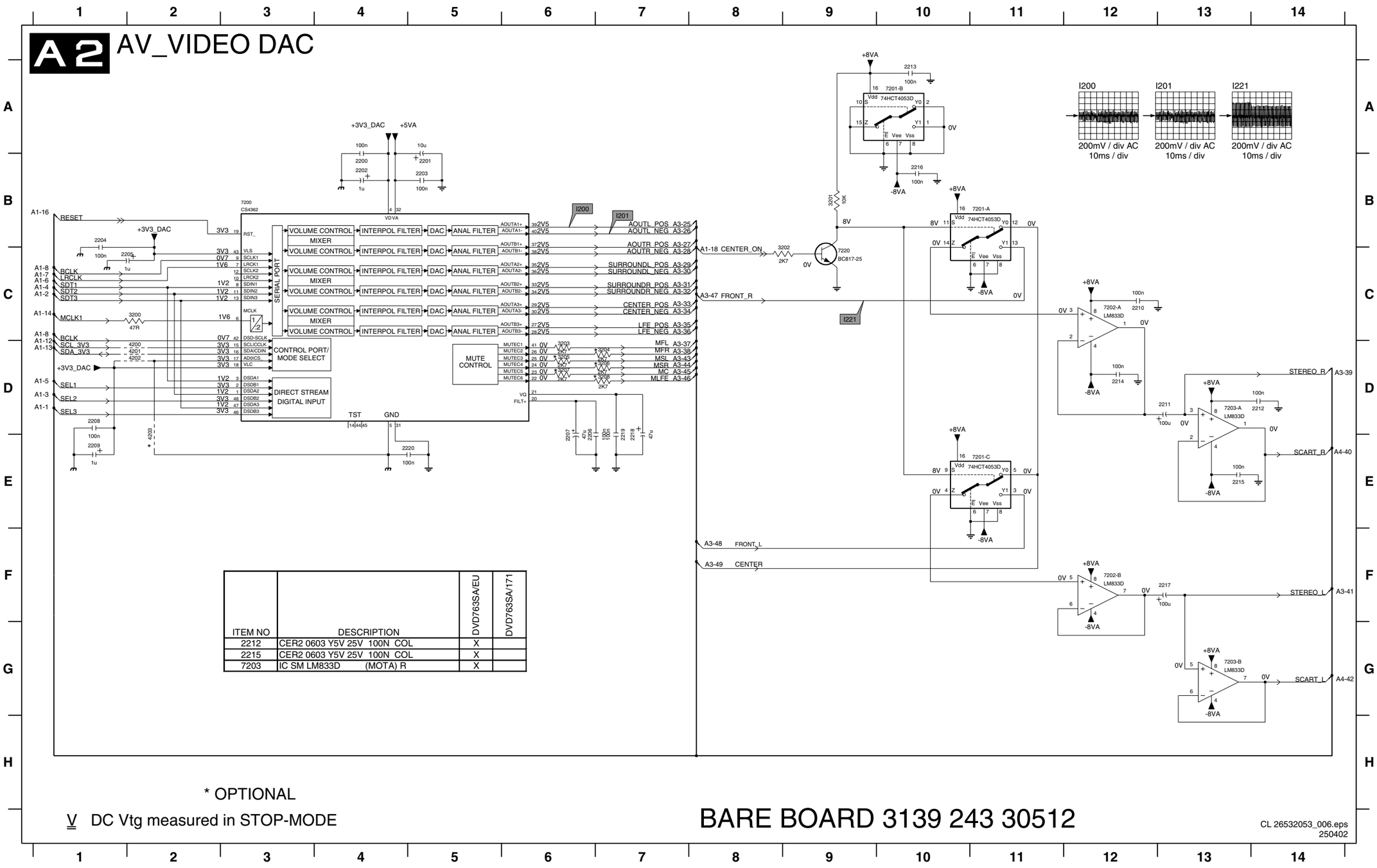
BARE BOARD 3139 243 30512

V DC Vtg measured in STOP-MODE

CL 26532053_005.eps 250402

AV-Board: Video DAC

A2 AV_VIDEO DAC



ITEM NO	DESCRIPTION	DVD763SA/EU	DVD763SA/171
2212	CER2 0603 Y5V 25V 100N COL	X	
2215	CER2 0603 Y5V 25V 100N COL	X	
7203	IC SM LM833D (MOTA) R	X	

* OPTIONAL

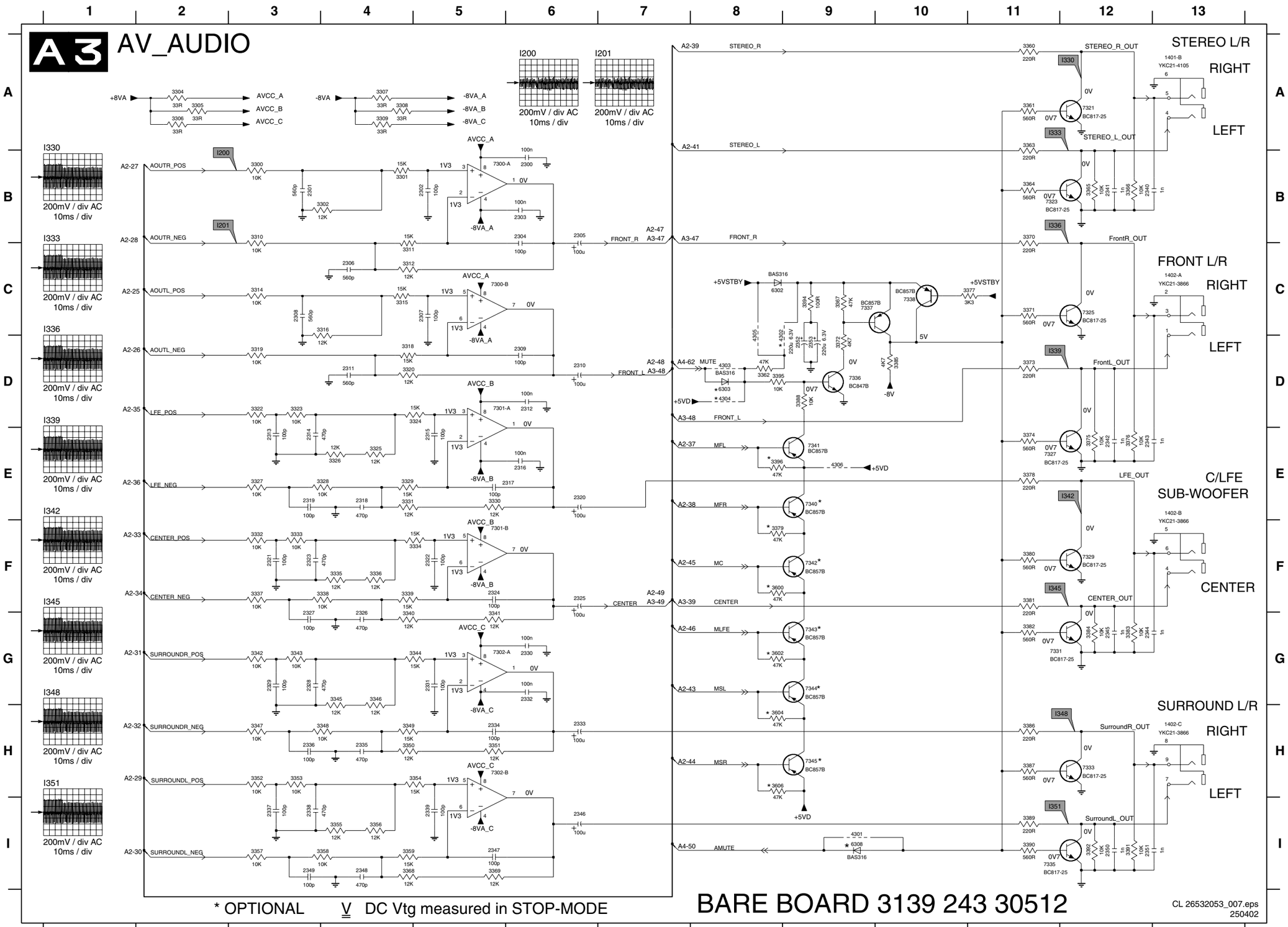
V DC Vtg measured in STOP-MODE

BARE BOARD 3139 243 30512

CL 26532053_006.eps
250402

2200 B4
2201 B5
2202 B4
2203 B5
2204 B1
2205 C2
2206 E6
2207 E6
2208 D1
2209 E1
2210 C12
2211 C13
2212 C14
2213 A10
2214 D12
2215 D14
2216 B10
2217 F13
2218 E7
2219 E7
2220 E5
3200 C2
3201 B9
3202 C8
3203 D6
3204 D7
3205 D6
3206 D7
3207 D6
3208 D7
4200 D2
4201 D2
4202 D2
4203 D2
7200 B3
7201-A B11
7201-B A10
7201-C E11
7202-A C12
7202-B F12
7203-A C13
7203-B G13
7220 C9

AV-Board: Audio



1401-B A13	3362 D8
1402-A C13	3363 A11
1402-B E13	3364 B11
1402-C H13	3365 B12
2300 B6	3366 B12
2301 B3	3367 C9
2302 B5	3368 I4
2303 B6	3369 I5
2304 B6	3370 B11
2305 B6	3371 C11
2306 C4	3372 D9
2307 C5	3373 D11
2308 C3	3374 E11
2309 D6	3375 E12
2310 D6	3376 E12
2311 D4	3377 C11
2312 D6	3378 E11
2313 E3	3379 E8
2314 E3	3380 F11
2315 E5	3381 F11
2316 E6	3382 G11
2317 E6	3383 G12
2318 E4	3384 G12
2319 E3	3385 D10
2320 E6	3386 H11
2321 F3	3387 H11
2322 F5	3388 D9
2323 F3	3389 I11
2324 F5	3390 I11
2325 F6	3391 I12
2326 G4	3392 I12
2327 G3	3394 C9
2328 G3	3395 D8
2329 G3	3396 E8
2330 G6	3600 F8
2331 G5	3602 G8
2332 G6	3604 G8
2333 H6	3606 H8
2334 H5	4301 I9
2335 H4	4302 D9
2336 H3	4303 D8
2337 I3	4304 D8
2338 I3	4305 D8
2339 I5	6302 C8
2340 B12	6303 D8
2341 B12	6308 I9
2342 E12	7300-A B5
2343 E12	7300-B C5
2344 G12	7301-A D5
2345 G12	7301-B F5
2346 I6	7302-A G5
2347 I5	7302-B H5
2348 I4	7321 A12
2349 I3	7323 B11
2350 I12	7325 C12
2351 I12	7327 E11
2352 D9	7329 F12
2353 D9	7331 G11
3300 B3	7333 H12
3301 B4	7335 I11
3302 B4	7336 D9
3304 A2	7337 C9
3305 A2	7338 C10
3306 A2	7340 F9
3307 A4	7341 E8
3308 A4	7342 F9
3309 A4	7343 G9
3310 B3	7344 H9
3311 C4	7345 H9
3312 C4	
3314 C3	
3315 C4	
3316 C4	
3318 D4	
3319 D3	
3320 D4	
3322 D3	
3323 D3	
3324 D5	
3325 E4	
3326 E4	
3327 E3	
3328 E4	
3329 E4	
3330 E5	
3331 E4	
3332 F3	
3333 F3	
3334 F5	
3335 F4	
3336 F4	
3337 F3	
3338 F4	
3339 F4	
3340 G4	
3341 G5	
3342 G3	
3343 G3	
3344 G5	
3345 G4	
3346 G4	
3347 H3	
3348 H4	
3349 H4	
3350 H4	
3351 H5	
3352 H3	
3353 H3	
3354 H5	
3355 I4	
3356 I4	
3357 I3	
3358 I4	
3359 I4	
3360 A11	
3361 A11	

AV-Board: Video

A 4 AV_VIDEO

TO 1300 OF SCART BOARD S1

FROM 0201 OF PSU P

FROM 1703 OF SD4.00SA MONO BOARD M7

ONLY FOR SCART

VIDEO CVBS

S.VIDEO

DIGITAL

OPTICAL

BARE BOARD 3139 243 30512

V DC Vtg measured in STOP-MODE

CL 26532053_008.eps 250402

1401-A C13	3413 C7	4402 G13
1403 A1	3414 C5	4403 H7
1408 D14	3415 C7	4404 E4
1409-A E14	3416 C7	4405 I2
1409-B F14	3417 C6	4406 E13
1409-C G14	3418 C5	4407 D12
1410 H14	3419 C6	4408 E12
1420 C1	3420 B8	4409 D11
1421 E1	3421 C8	4410 C11
1445 G3	3422 C8	4411 E10
1446 G3	3423 C7	4412 F10
2112 C11	3430 A9	4413 G10
2402 E7	3431 A10	5400 D7
2404 E7	3440 A9	5401 E7
2405 F5	3441 A9	5402 E7
2406 F6	3442 A11	5403 H9
2408 I4	3443 A11	5410 C11
2409 I4	3444 B10	5411 F13
2410 B10	3445 B10	5412 G13
2411 D13	3446 B9	5413 H12
2412 D13	3447 B11	5414 F13
2413 E10	3448 B9	5415 D13
2414 E13	3449 B9	5416 E13
2415 E13	3450 A12	6400 G11
2417 E6	3451 A12	6401 H11
2418 H7	3452 B12	6402 F11
2419 H7	3453 C10	6403 C11
2420 F12	3454 C12	6404 D11
2421 G12	3455 C10	6405 E11
2422 H12	3456 C12	6406 E2
2423 H9	3457 D9	7401 E6
2424 H11	3458 D10	7403 H7
2425 I13	3459 D10	7420 C3
2426 I12	3460 D12	7421 C5
2427 I11	3461 E12	7422 C5
2428 I14	3462 E9	7423 C6
2429 G7	3463 E9	7424 C4
2430 F3	3464 E12	7425 C7
2431 F3	3465 F9	7430 A9
2432 D11	3466 F9	7431 A13
2433 E10	3467 F12	7432 A12
2434 F10	3468 F9	7433 B12
2435 G10	3469 G9	7434 B9
3400 B5	3470 G12	7435 C10
3401 B3	3471 G9	7436 E10
3402 B4	3472 H12	7437 D11
3403 C3	3473 I10	7440 E10
3404 C4	3474 I11	7441 F10
3405 C5	3491 F5	7442 G10
3406 C4	3492 H6	7443 E4
3407 C4	3493 I4	7445 F6
3408 C3	3495 H4	7446 F7
3409 C4	3496 E4	7604 H10
3410 B6	3497 E9	
3411 B7	4400 C11	
3412 C6	4401 F13	

ITEM NO.	DESCRIPTION	DVD763SA/EU	DVD763SA/171
1403	CON BM V 22P F 1.00 FFC 0.3 B	X	
3400	RST SM 0603 100R PM5 COL	X	
3401	RST SM 0603 100R PM5 COL	X	
3402	RST SM 0603 100R PM5 COL	X	
3403	RST SM 0603 RC21 56R PM5 R	X	
3404	RST SM 0603 RC21 56R PM5 R	X	
3405	RST SM 0603 RC21 56R PM5 R	X	
3406	RST SM 0603 2K2 PM5 COL	X	
3407	RST SM 0603 RC21 82R PM5 R	X	
3408	RST SM 0603 2K2 PM5 COL	X	
3409	RST SM 0603 75R PM5 COL	X	
3410	RST SM 0603 100R PM5 COL	X	
3411	RST SM 0603 100R PM5 COL	X	
3412	RST SM 0603 68R PM5 COL	X	
3413	RST SM 0603 68R PM5 COL	X	
3414	RST SM 0603 75R PM5 COL	X	
3415	RST SM 0603 2K2 PM5 COL	X	
3416	RST SM 0603 75R PM5 COL	X	
3417	RST SM 0603 2K2 PM5 COL	X	
3418	RST SM 0603 2K2 PM5 COL	X	
3419	RST SM 0603 75R PM5 COL	X	
3420	RST SM 0603 100R PM5 COL	X	
3421	RST SM 0603 RC21 56R PM5 R	X	
3422	RST SM 0603 75R PM5 COL	X	
3423	RST SM 0603 2K2 PM5 COL	X	
7420	TRA SIG SM BC847B (COL) R	X	
7421	TRA SIG SM BC847B (COL) R	X	
7422	TRA SIG SM BC847B (COL) R	X	
7423	TRA SIG SM BC847B (COL) R	X	
7424	TRA SIG SM BC847B (COL) R	X	
7425	TRA SIG SM BC847B (COL) R	X	

I502
500mV / div AC
20µs / div

I499
2V / div DC
200ns / div

I500
500mV / div DC
200ns / div

I491
500mV / div AC
20µs / div

I494
500mV / div AC
20µs / div

I231
200mV / div AC
10ms / div

I234
200mV / div AC
10ms / div

I400 RGB Video output
500mV / div AC
20µs / div

I401 RGB Video output
500mV / div AC
20µs / div

I402 RGB Video output
500mV / div AC
20µs / div

I403
500mV / div AC
20µs / div

I406
500mV / div AC
20µs / div

I407
500mV / div AC
20µs / div

I418 RGB Video output
500mV / div AC
20µs / div

I418 YUV Video output
500mV / div AC
20µs / div

I419 YUV Video output
500mV / div AC
20µs / div

I419 RGB Video output
500mV / div AC
20µs / div

I420 RGB Video output
500mV / div AC
20µs / div

I420 YUV Video output
500mV / div AC
20µs / div

I421
500mV / div AC
20µs / div

I422
500mV / div AC
20µs / div

I423
500mV / div AC
20µs / div

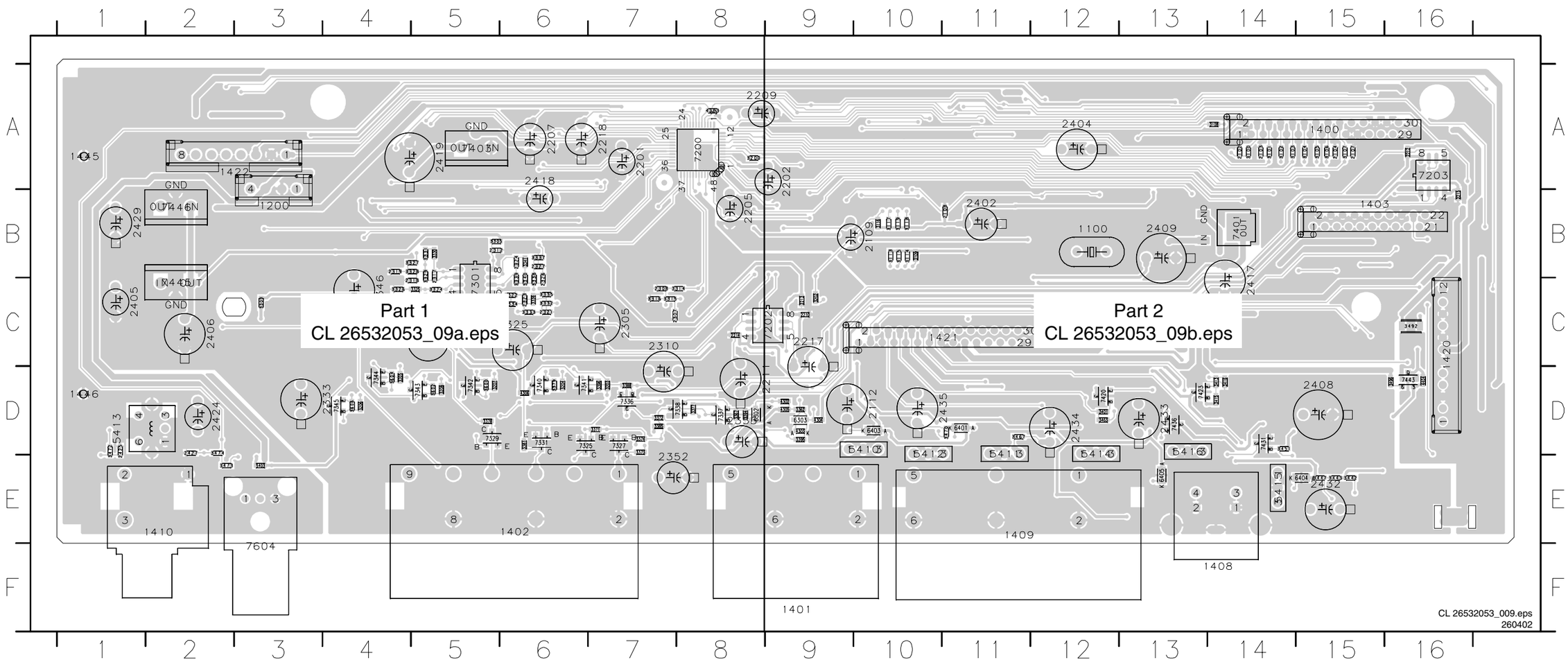
I480
500mV / div AC
20µs / div

I482
500mV / div AC
20µs / div

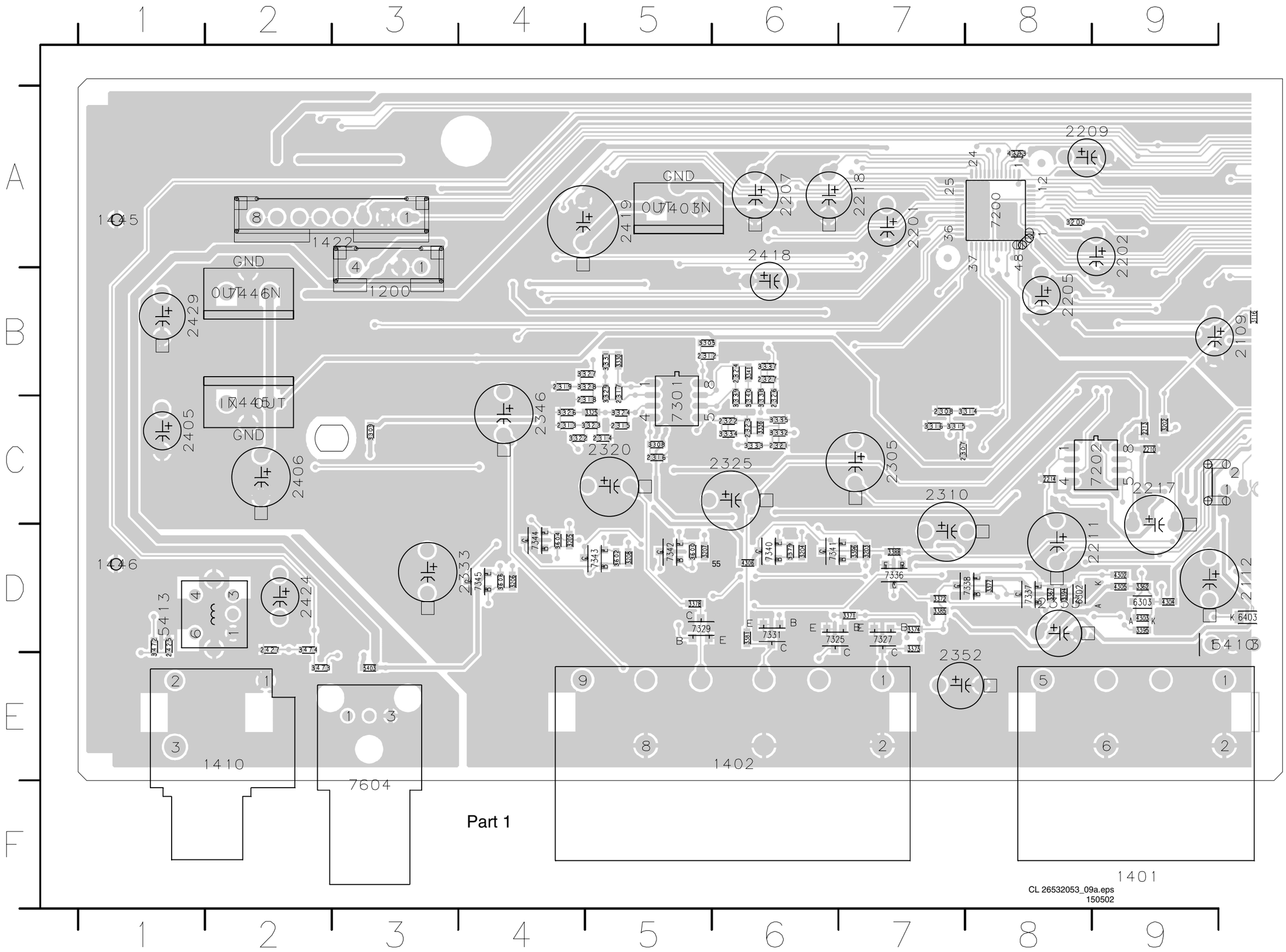
I483
500mV / div AC
20µs / div

Layout AV-Board (Overview Top Side)

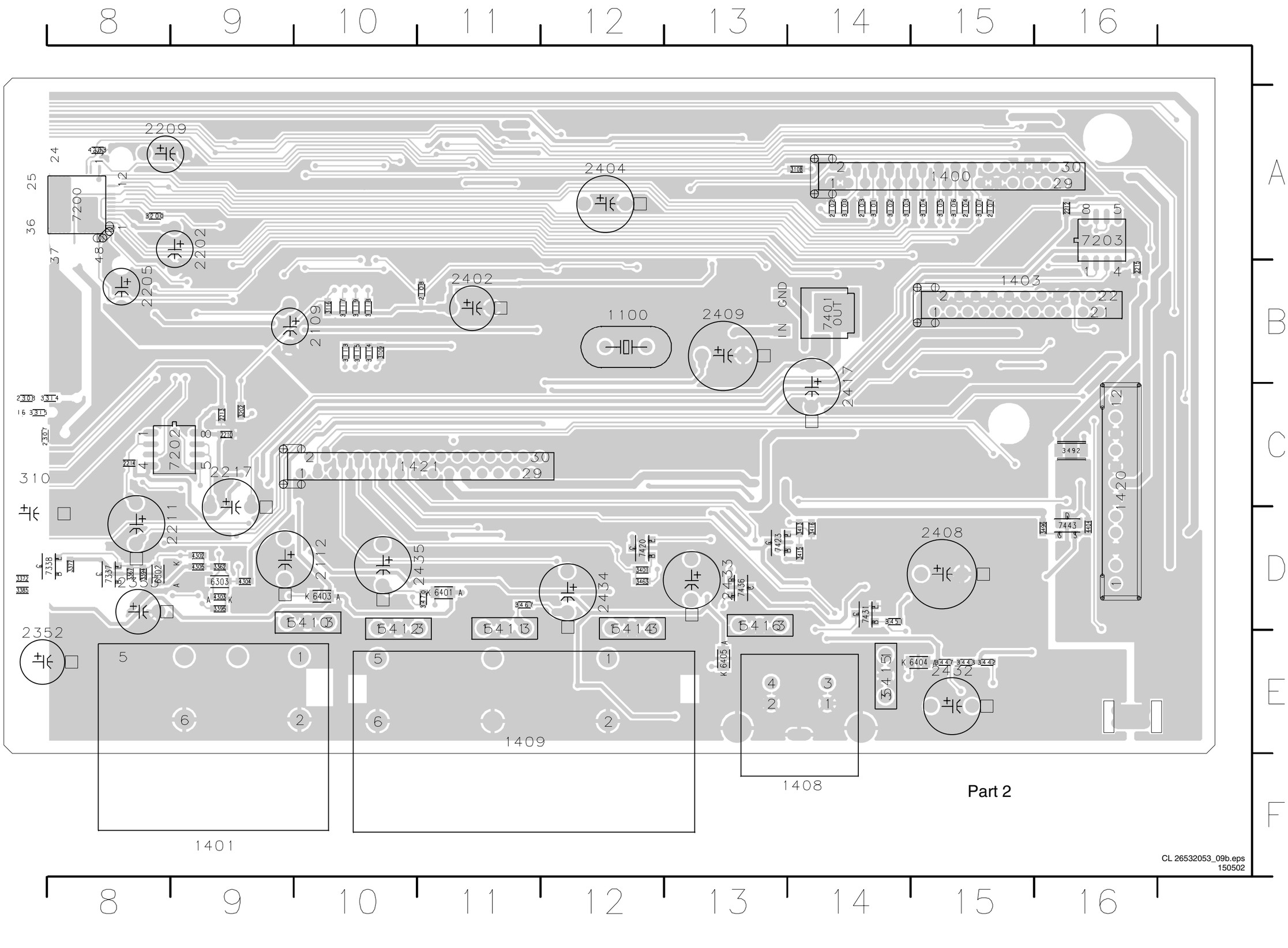
1100 B12	1445 A1	2207 A6	2308 C7	2322 C6	2405 B1	2433 D13	3109 B10	3205 D4	3324 C5	3336 C6	3377 D8	3416 D14	3496 D16	5403 E3	6404 E15	7338 D8	7436 D13
1200 B3	1446 D1	2209 A8	2310 C7	2323 C6	2406 D2	2434 D12	3113 B10	3206 D4	3325 C5	3337 B6	3378 D5	3442 E15	3600 D5	5410 E9	6405 E13	7340 D6	7443 D16
1400 A15	2102 A14	2210 C9	2312 B5	2324 B6	2408 D14	2435 D11	3114 B10	3207 D5	3326 C4	3338 C6	3379 D6	3443 E15	3602 D5	5411 D11	7200 A8	7341 D6	7445 B2
1401 E8	2103 A14	2211 C8	2313 C4	2325 C5	2409 B13	3100 A14	3115 B10	3208 D5	3327 B5	3339 C6	3381 D6	3447 E15	3604 D4	5412 D10	7202 C9	7342 D5	7446 A2
1402 E4	2104 A15	2212 A16	2314 C5	2326 C6	2417 C13	3101 A14	3116 B10	3305 B5	3328 B5	3340 C6	3385 D7	3451 D14	3606 D4	5413 D2	7203 A16	7343 D5	7604 E3
1403 B15	2107 A15	2213 C9	2315 C5	2327 B6	2418 A6	3102 A14	3117 B10	3308 C5	3329 B5	3341 B6	3388 D7	3463 D12	4203 A8	5414 D12	7301 C5	7344 D4	
1408 E14	2108 B11	2214 C8	2316 C5	2333 D3	2419 A4	3103 A14	3118 B10	3309 C3	3330 B5	3362 D9	3394 D8	3467 D11	4302 D9	5415 E14	7325 D6	7345 D4	
1409 E12	2109 B9	2215 B16	2317 B5	2346 C4	2424 D2	3104 A15	3119 B10	3314 C8	3331 B5	3367 D8	3395 D9	3470 D11	4303 D9	5416 D13	7327 D7	7401 B14	
1410 E1	2112 D10	2217 D9	2318 C5	2352 E7	2425 D1	3105 A15	3200 A8	3315 C7	3332 C6	3371 D7	3396 D7	3472 D1	4304 D9	6302 D8	7329 D5	7403 A5	
1420 C16	2201 A7	2218 A6	2319 B4	2353 E9	2427 D2	3106 A15	3202 C9	3316 C7	3333 C6	3372 D7	3401 D12	3473 E2	4305 D9	6303 D9	7331 D6	7420 D12	
1421 C11	2202 A9	2305 C7	2320 C4	2402 B11	2429 B1	3107 A15	3203 D7	3322 C4	3334 C6	3373 D7	3413 D14	3474 D2	4306 D6	6401 D11	7336 D7	7423 D13	
1422 A2	2205 B8	2307 C7	2321 C6	2404 A12	2432 E15	3108 A14	3204 D6	3323 C5	3335 C6	3374 D7	3415 D14	3492 C16	4404 D16	6403 D10	7337 D8	7431 D14	



Layout AV-Board (Part 1 Top Side)



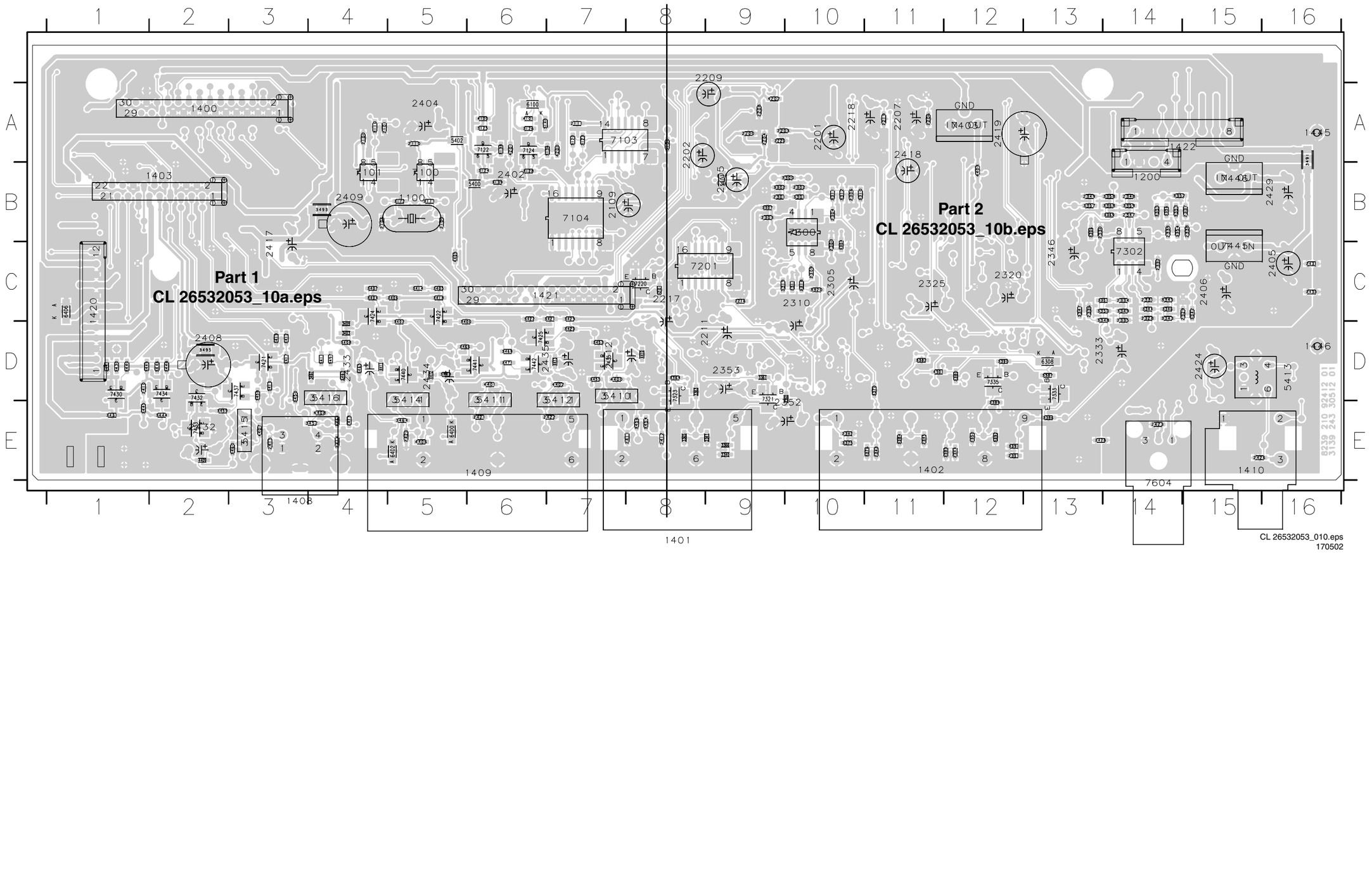
Layout AV-Board (Part 2 Top Side)



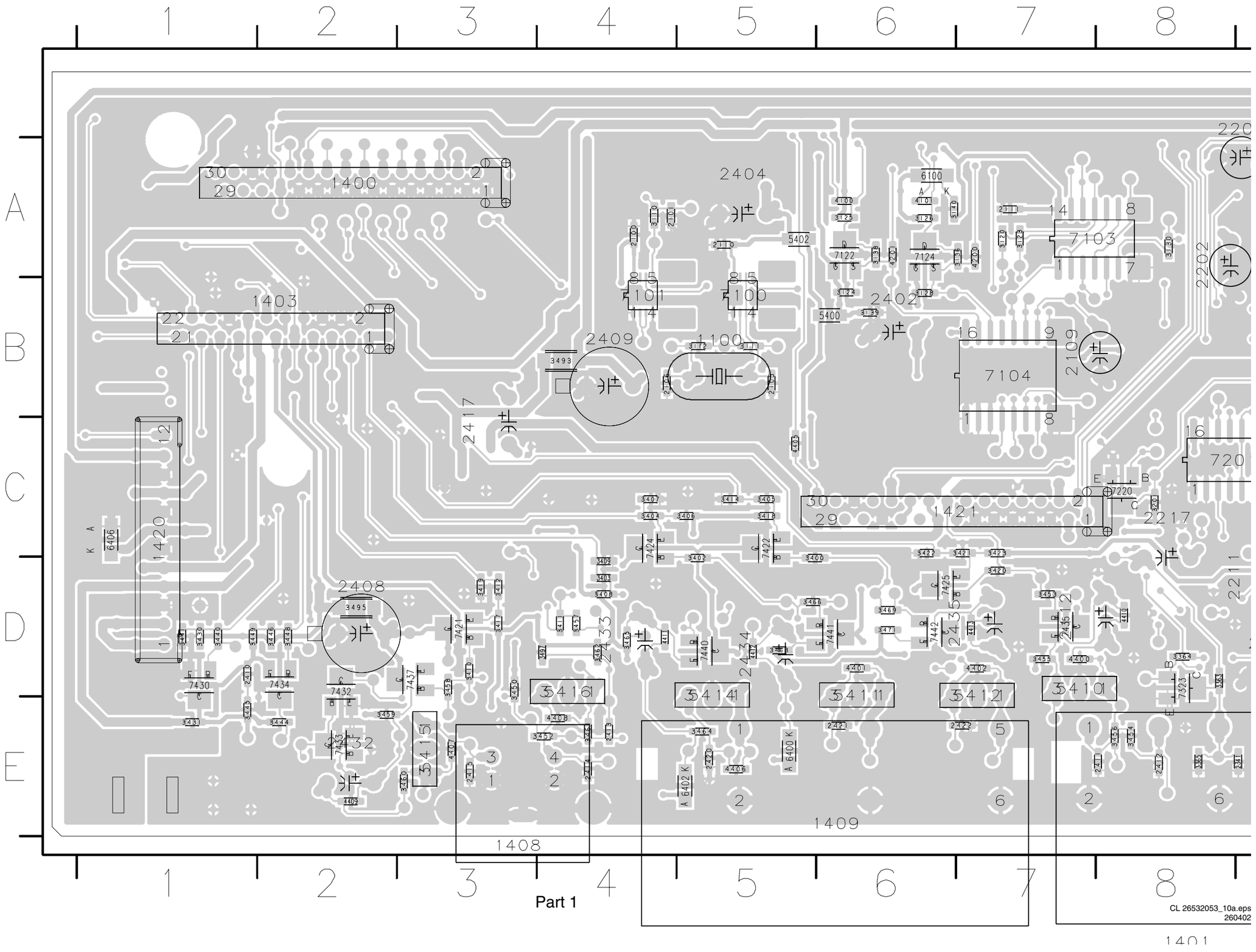
Part 2

Layout AV-Board (Overview Bottom Side)

2100 A4, 2101 A4, 2105 B5, 2106 B4, 2110 A5, 2111 A7, 2200 A9, 2203 A9, 2204 A9, 2206 A11, 2208 A9, 2216 C9, 2219 A11, 2220 A9, 2300 C10, 2301 B9, 2302 B10, 2303 B9, 2304 B10, 2306 B10, 2309 C10, 2311 C10, 2328 C14, 2329 C15, 2330 B13, 2331 C14, 2332 C14, 2334 C14, 2335 C14, 2336 C13, 2337 B15, 2338 B15, 2339 B14, 2340 E9, 2341 E9, 2342 E10, 2343 E11, 2344 E12, 2345 E11, 2347 B14, 2348 B14, 2349 B13, 2350 E12, 2351 E12, 2410 D1, 2411 E8, 2412 E8, 2413 E4, 2414 E4, 2415 E3, 2420 E5, 2421 E6, 2422 E7, 2423 E14, 2426 E15, 2428 E13, 2430 C16, 2431 C16, 3110 A4, 3111 B5, 3112 B5, 3120 A7, 3123 A7, 3124 B6, 3125 A6, 3126 A6, 3128 B6, 3130 A8, 3136 A7, 3138 A6, 3139 B6, 3140 A6, 3200 C8, 3300 B10, 3301 B10, 3302 B9, 3304 C10, 3306 B13, 3307 B9, 3310 B10, 3311 B10, 3312 B10, 3318 C10, 3319 C9, 3320 C10, 3342 C15, 3343 C14, 3344 C14, 3345 C14, 3346 C14, 3347 C13, 3348 C14, 3349 C14, 3350 C14, 3351 C14, 3352 B14, 3353 B14, 3354 B14, 3355 B14, 3356 B14, 3357 B13, 3358 B14, 3359 B14, 3360 D10, 3361 D9, 3363 D8, 3364 D8, 3365 E8, 3366 E9, 3368 B14, 3369 B14, 3370 D11, 3375 E10, 3376 E11, 3380 D12, 3382 D11, 3383 E12, 3384 E11, 3386 E13, 3387 D13, 3389 E12, 3390 D12, 3391 E12, 3392 E12, 3400 D5, 3402 D5, 3403 D4, 3404 C4, 3405 C5, 3406 C5, 3407 C4, 3408 D4, 3409 D4, 3410 D3, 3411 D4, 3412 D3, 3414 C5, 3417 D3, 3418 C5, 3419 D3, 3420 D7, 3421 C7, 3422 C6, 3423 C7, 3430 D1, 3431 E1, 3440 D1, 3441 D1, 3444 E2, 3445 E1, 3446 D2, 3448 D2, 3449 D1, 3450 D3, 3452 E4, 3453 D7, 3454 E8, 3455 D7, 3456 E8, 3457 D4, 3458 D3, 3459 E2, 3460 E3, 3461 E4, 3462 D4, 3464 E5, 3465 D4, 3466 D5, 3468 D5, 3469 D6, 3471 D6, 3491 A16, 3493 B4, 3495 D2, 3497 D4, 4100 A6, 4101 A6, 4200 A7, 4201 A6, 4202 A9, 4301 D11, 4400 D7, 4401 D6, 4402 D7, 4403 B12, 4405 C5, 4406 E5, 4407 E3, 4408 E4, 4409 E2, 4410 D8, 4411 D4, 4413 D7, 5400 B6, 5401 B9, 5402 A5, 6100 A6, 6308 D13, 6400 E5, 6402 E5, 6406 C1, 7100 B5, 7101 B4, 7103 A7, 7104 B7, 7122 A6, 7124 A6, 7200 C8, 7201 C8, 7300 B10, 7302 C14, 7321 D9, 7323 D8, 7333 D13, 7335 D12, 7400 D5, 7401 D6, 7402 C5, 7403 D6, 7422 C4, 7425 D6, 7430 D1, 7432 D2, 7433 E2, 7434 D2, 7435 D7, 7437 D3, 7440 D5, 7441 D6, 7442 D6

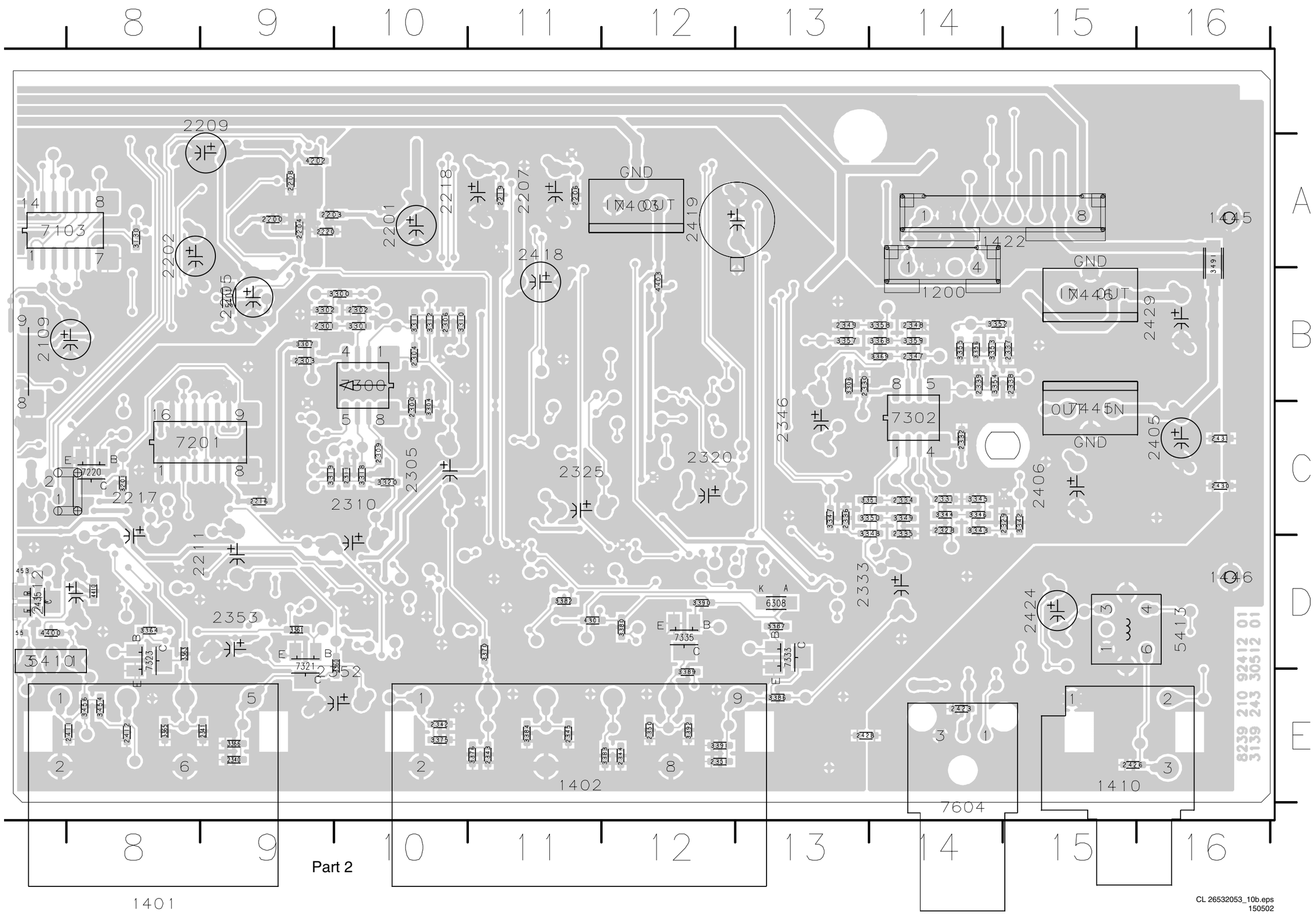


Layout AV-Board (Part 1 Bottom Side)



Part 1

Layout AV-Board (Part 2 Bottom Side)



DVD763SA 30521-Front Board: Display Panel

DISPLAY PANEL

FTD DISPLAY

11-MT-126GNK
1100

INFO : FIL1 - FIL2
= 3.5 Vac RMS

I173: 10V/div DC, 10µs/div
I176: 2V/div DC, 10µs/div
S1: 1V/div DC, 50µs/div

For models with P50 only

TO 1100 OF MIC BOARD

TO 1200 CONN STANDBY BOARD

FROM 1422 of AV Board
* FOR DVD763 ONLY

FROM 1102 of AV Board
* ONLY FOR DVD743 EU

FROM 0201 of PSU
* ONLY for DVD743 EU

LEGEND:
* OPTIONAL
# FOR DVD743 EU

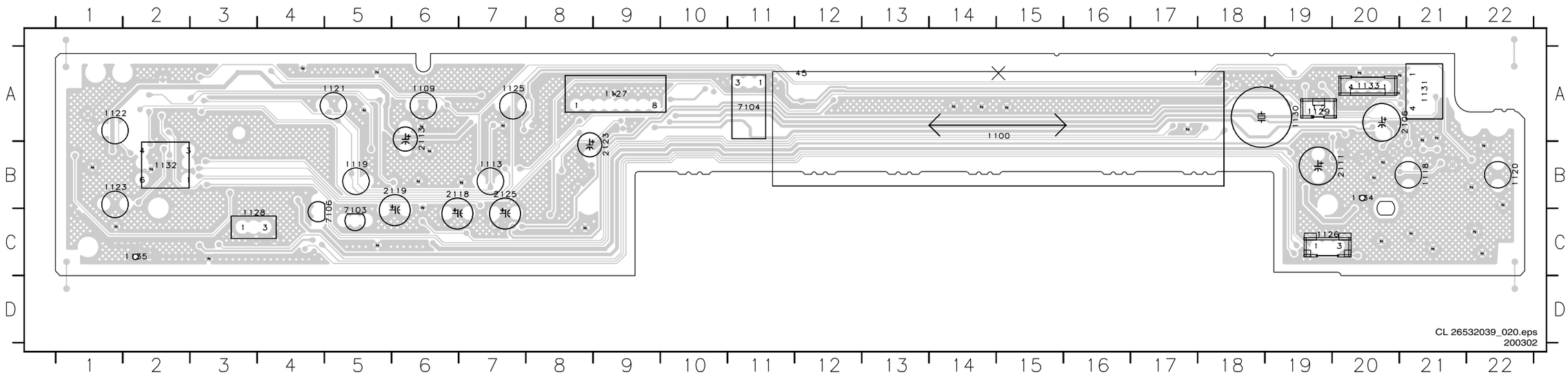
V DC vtg measured in STOP-MODE

CL 25632039_007.eps
190302

1100 A6
1109 C10
1113 C11
1118 D11
1119 D10
1120 D9
1121 D11
1122 D12
1123 D13
1125 D11
1126 E1
1127 E14
1128 G5
1129 I1
1130 H7
1131 G1
1132 C14
1133 G14
1134 D1
1135 C1
2100 A11
2101 A12
2102 D9
2103 F2
2104 F4
2105 F2
2106 F11
2107 F9
2108 G5
2109 G6
2110 G10
2111 G12
2112 H7
2113 H4
2114 H5
2115 H5
2116 H6
2117 H11
2118 H12
2119 I12
2120 H14
2121 I2
2122 I7
2123 I8
2124 I2
2125 I12
2126 I9
2127 I10
3100 A4
3101 G9
3102 A4
3103 A8
3104 A8
3105 A12
3106 A12
3107 A12
3108 A11
3109 B12
3110 C11
3111 G7
3112 C12
3113 C11
3114 C13
3115 C13
3116 C14
3117 C10
3118 E3
3119 E3
3120 F11
3121 F9
3122 G11
3123 F3
3124 G3
3125 G10
3126 H7
3127 G9
3128 I2
3129 H6
3130 H4
3131 H12
3132 H13
3133 H4
3134 G3
3135 H3
3136 H3
3137 I7
3138 I11
3139 H14
3140 I6
3141 I14
3142 I11
3143 F13
3144 G13
3145 C10
3146 F9
3147 F9
3148 G7
4100 I1
4101 I1
4102 I2
4103 G13
4104 G13
6100 A12
6101 G11
6102 H7
6103 H4
6104 F12
7100 A12
7101 C4
7102 H5
7103 H12
7104 I9
7105 H2
7106 I12
7107 I13

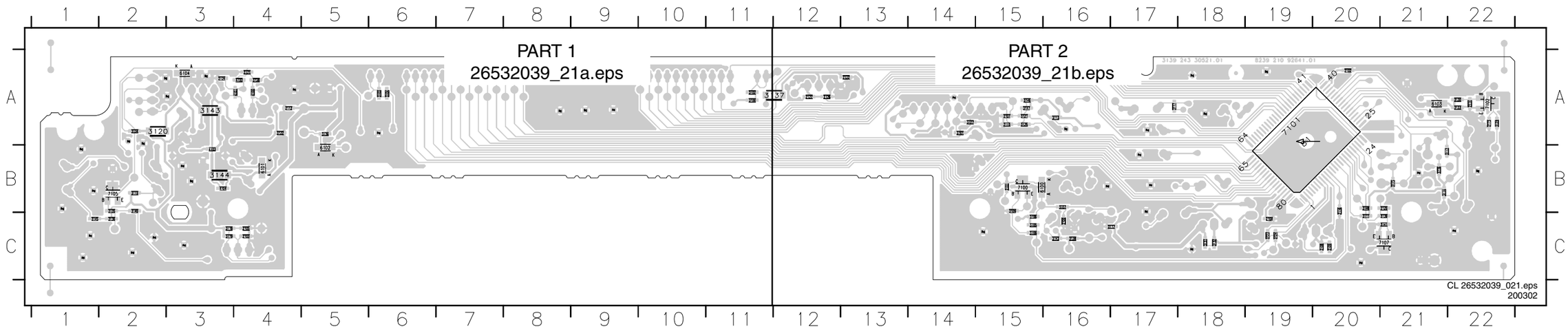
Layout DVD763SA 30521-Front Board (Top Side)

1100 A15
1109 A6
1113 B7
1118 B20
1119 B5
1120 B22
1121 A5
1122 A1
1123 B1
1125 A7
1126 C19
1127 A9
1128 C3
1129 A19
1130 A18
1131 A21
1132 B2
1133 A20
1134 B20
1135 C2
2106 B20
2111 B19
2113 A6
2118 B6
2119 B6
2123 A8
2125 B7
7103 C5
7104 B11
7106 B4

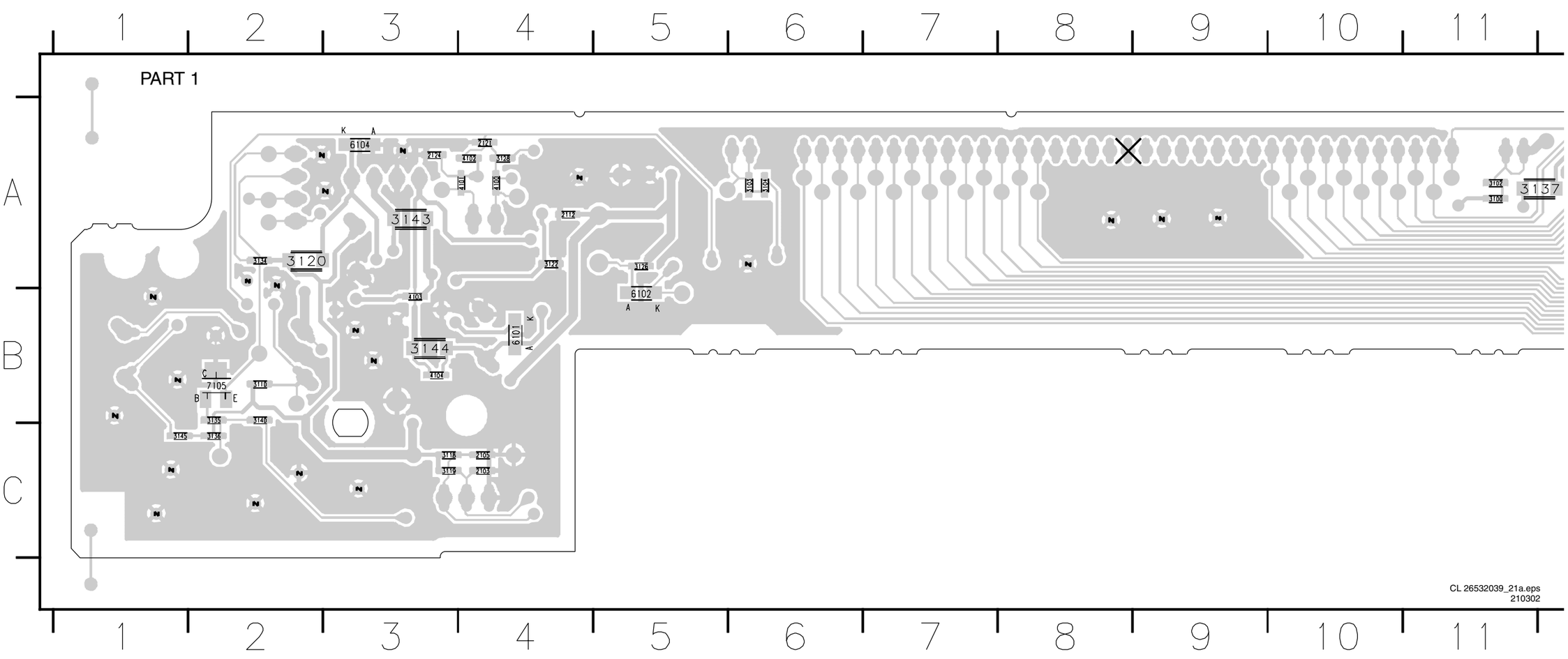


Layout DVD763SA 30521-Front Board (Overview Bottom Side)

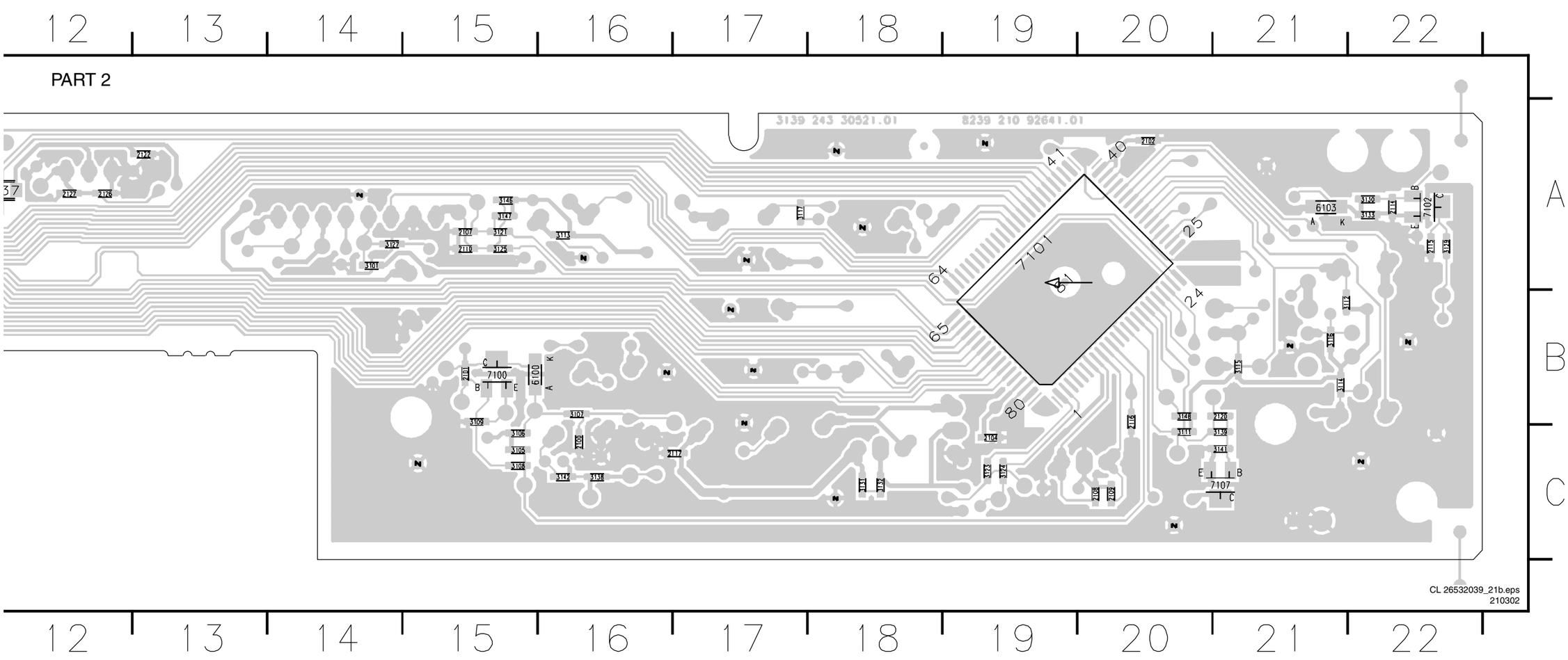
2100 C16
2101 B15
2102 A20
2103 C4
2104 C19
2105 C4
2107 A15
2108 C20
2109 C20
2110 A15
2112 A4
2114 A22
2115 A22
2116 B20
2117 C17
2120 B21
2121 A4
2122 A13
2124 A3
2126 A12
2127 A12
3100 A11
3101 A14
3102 A11
3103 A6
3104 A6
3105 C15
3106 C15
3107 B16
3108 C15
3109 B15
3110 B2
3111 C20
3113 A16
3114 B21
3115 B21
3116 B21
3117 A17
3118 C3
3119 C3
3120 A2
3121 A15
3122 A4
3123 C19
3124 C19
3125 A15
3126 A5
3127 A14
3128 A4
3129 A22
3130 A22
3131 C18
3132 C18
3133 A22
3134 A2
3135 B2
3136 C2
3137 A12
3138 C16
3139 C21
3140 B2
3141 C21
3142 C16
3143 A3
3144 B3
3145 C1
3146 A15
3147 A15
3148 B20
4100 A4
4101 A4
4102 A4
6100 B15
6101 B4
6102 B5
6103 A21
7100 B15
7101 A19
7102 A22
7105 B2
7107 C21



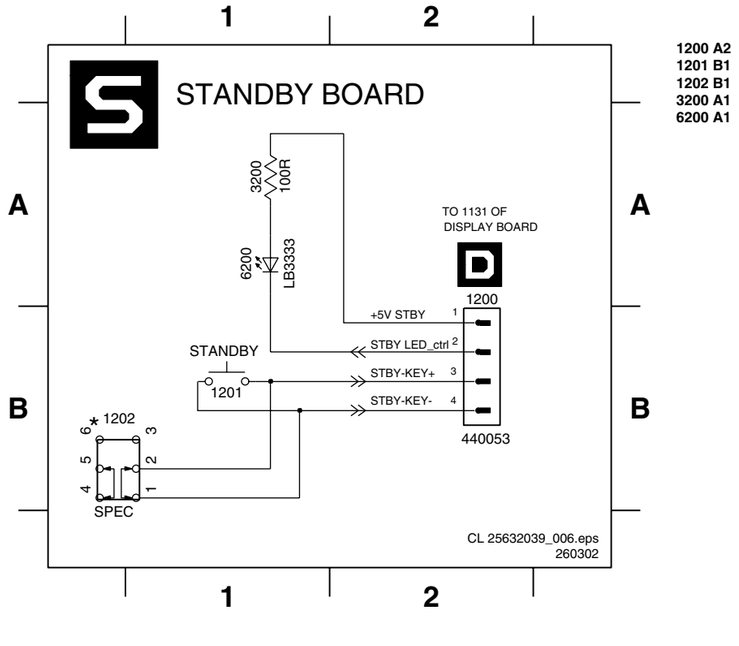
Layout DVD763SA 30521-Front Board (Part 1 Bottom Side)



Layout DVD763SA 30521-Front Board (Part 2 Bottom Side)

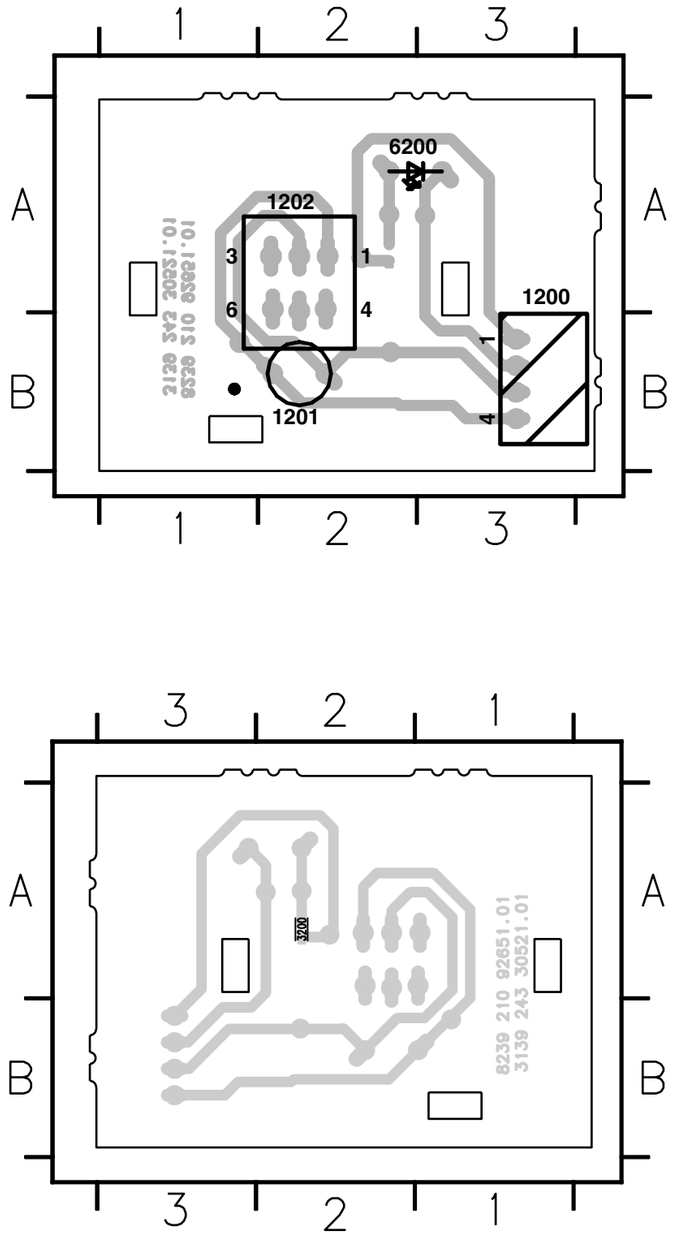


DVD763SA 30521-Front Board: Standby Panel



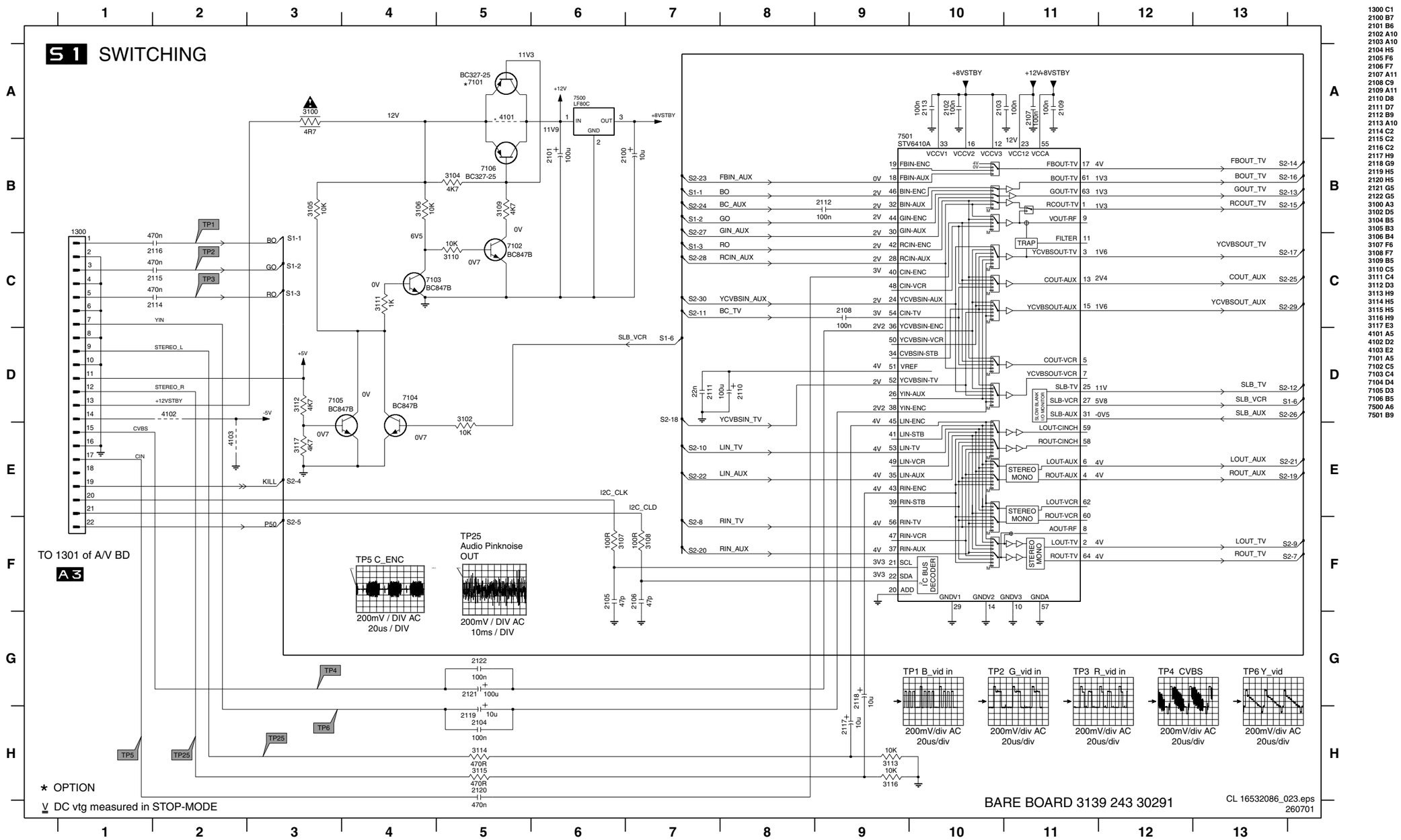
1200 A2
1201 B1
1202 B1
3200 A1
6200 A1

Layout DVD763SA 30521-Front Board: Standby Panel



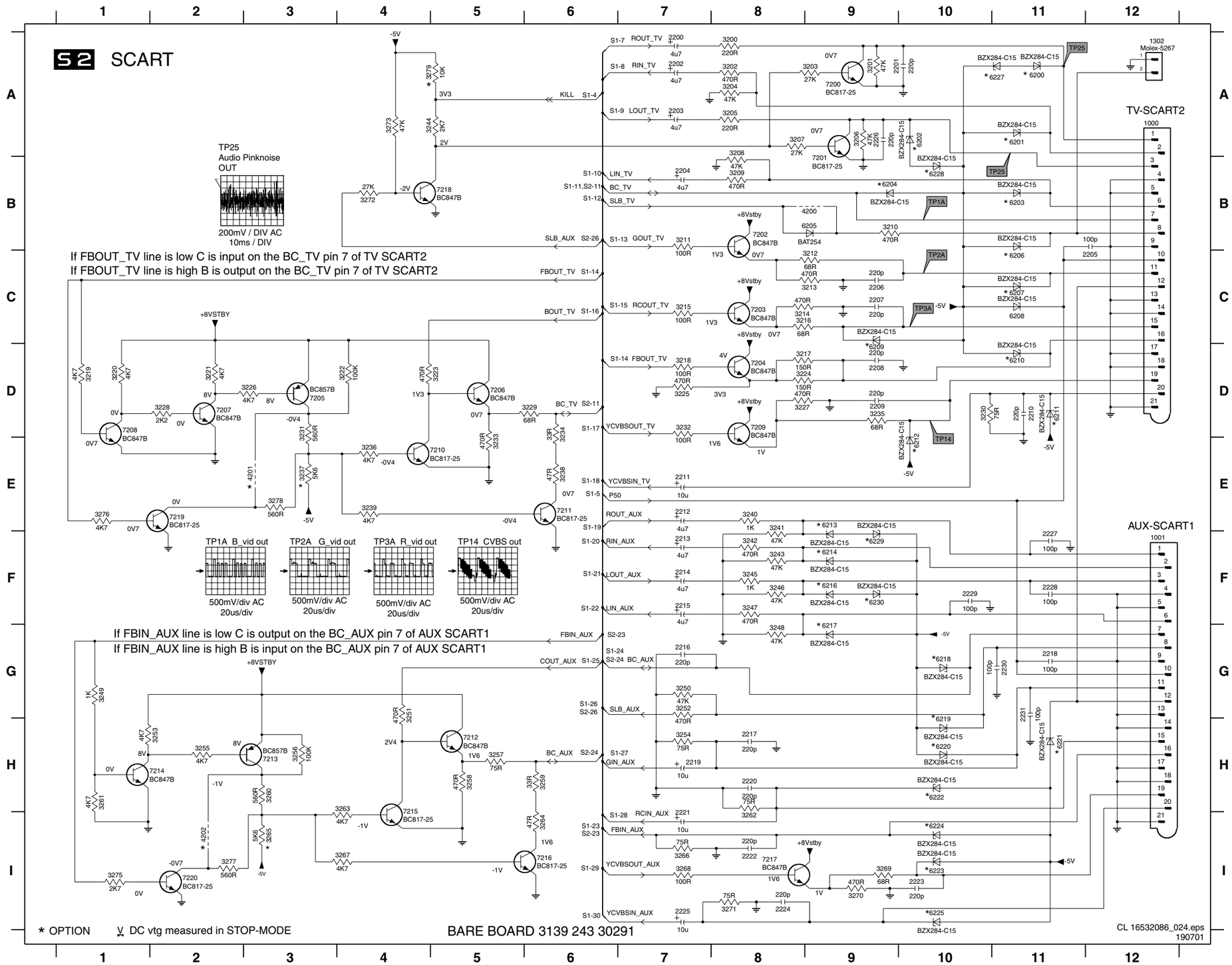
1200 A3
1201 B2
1202 A2
6200 A3
3200 A2

Switching Panel



1300 C1
2100 B7
2101 B6
2102 A10
2103 A10
2104 H5
2105 F6
2106 F7
2107 A11
2108 C9
2109 A11
2110 D8
2111 D7
2112 B9
2113 A10
2114 C2
2115 C2
2116 C2
2117 H9
2118 G9
2119 H5
2120 H5
2121 G5
2122 G5
3100 A3
3102 D5
3104 B5
3105 B3
3106 B4
3107 F6
3108 F7
3109 B5
3110 C5
3111 C4
3112 D3
3113 H9
3114 H5
3115 H5
3116 H9
3117 E3
4101 A5
4102 D2
4103 E2
7101 A5
7102 C5
7103 C4
7104 D4
7105 D3
7106 B5
7500 A6
7501 B9

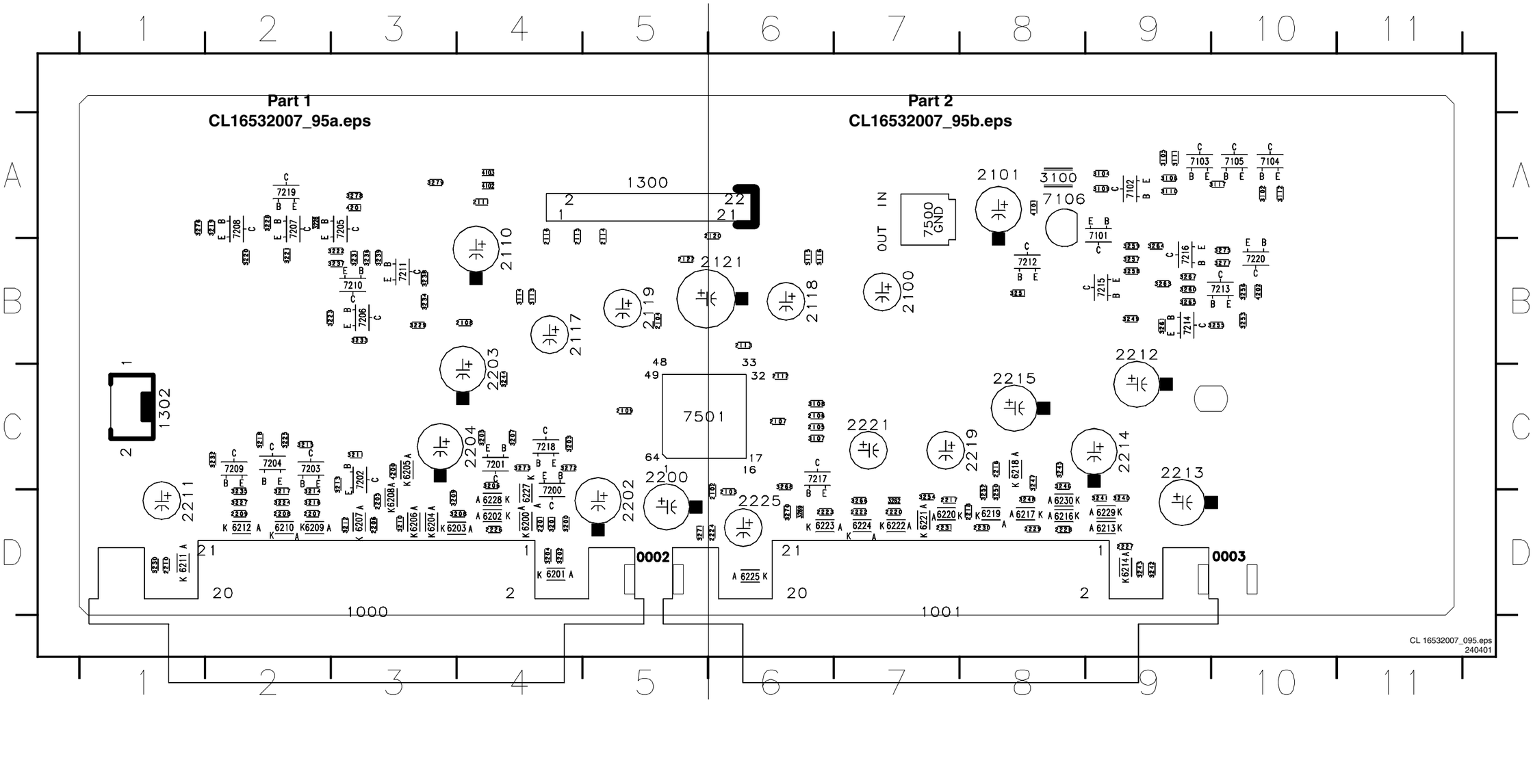
SCART Panel



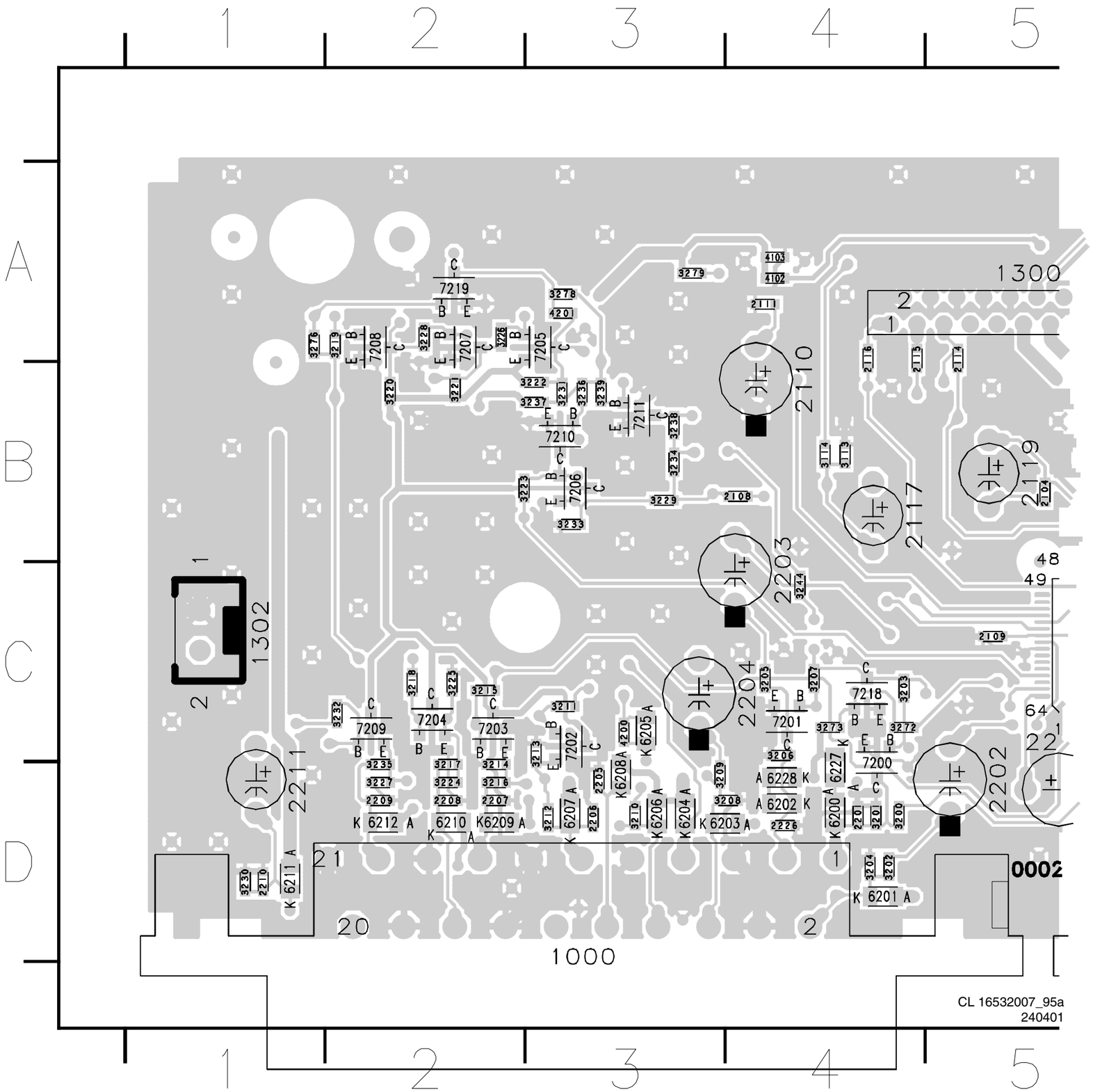
1000 A12 6200 A11
1001 F12 6201 A11
1302 A12 6202 A10
2200 A7 6203 B11
2201 A9 6204 B9
2202 A7 6205 B9
2203 A7 6206 C11
2204 B7 6207 C11
2205 C12 6208 C11
2206 C9 6209 D9
2207 C9 6210 D11
2208 D9 6211 D11
2209 D9 6212 E10
2210 D11 6213 E9
2211 E7 6214 F9
2212 E7 6216 F9
2213 F7 6217 G9
2214 F7 6218 G10
2215 F7 6219 H10
2216 G7 6220 H10
2217 H8 6221 H11
2218 G11 6222 H10
2219 H7 6223 I10
2220 H8 6224 I10
2221 I7 6225 I10
2222 I8 6227 A11
2223 I10 6228 B10
2224 I8 6229 F9
2225 I7 6230 F9
2226 A9 7200 A9
2227 F11 7201 B9
2228 F11 7202 B8
2229 F10 7203 C8
2230 G11 7204 D8
2231 G11 7205 D3
3200 A8 7206 D5
3201 A9 7207 D2
3202 A8 7208 D1
3203 A9 7209 D8
3204 A8 7210 E4
3205 A8 7211 E6
3206 A9 7212 H5
3207 A8 7213 H3
3208 A8 7214 H1
3209 B8 7215 I4
3210 B9 7216 I6
3211 B7 7217 I8
3212 C9 7218 B5
3213 C8 7219 E2
3214 C8 7220 I2
3215 C7
3216 C8
3217 D8
3218 D7
3219 D1
3220 D1
3221 D2
3222 D4
3223 D5
3224 D8
3225 D7
3226 D3
3227 D8
3228 D2
3229 D6
3230 D10
3231 D3
3232 D7
3233 E5
3234 D6
3235 D9
3236 E4
3237 E3
3238 E6
3239 E4
3240 E8
3241 E8
3242 F8
3243 F8
3244 A5
3245 F8
3246 F8
3247 F8
3248 G8
3249 G1
3250 G7
3251 G4
3252 G7
3253 H2
3254 H7
3255 H2
3256 H3
3257 H5
3258 H5
3259 H6
3260 H3
3261 H1
3262 I8
3263 H4
3264 I6
3265 I3
3266 I7
3267 I4
3268 I7
3269 I9
3270 I9
3271 I8
3272 B4
3273 A4
3275 I1
3276 E1
3277 I2
3278 E3
3279 A5
4200 B9
4201 E3
4202 I2

Layout SCART Board (Overview Top Side)

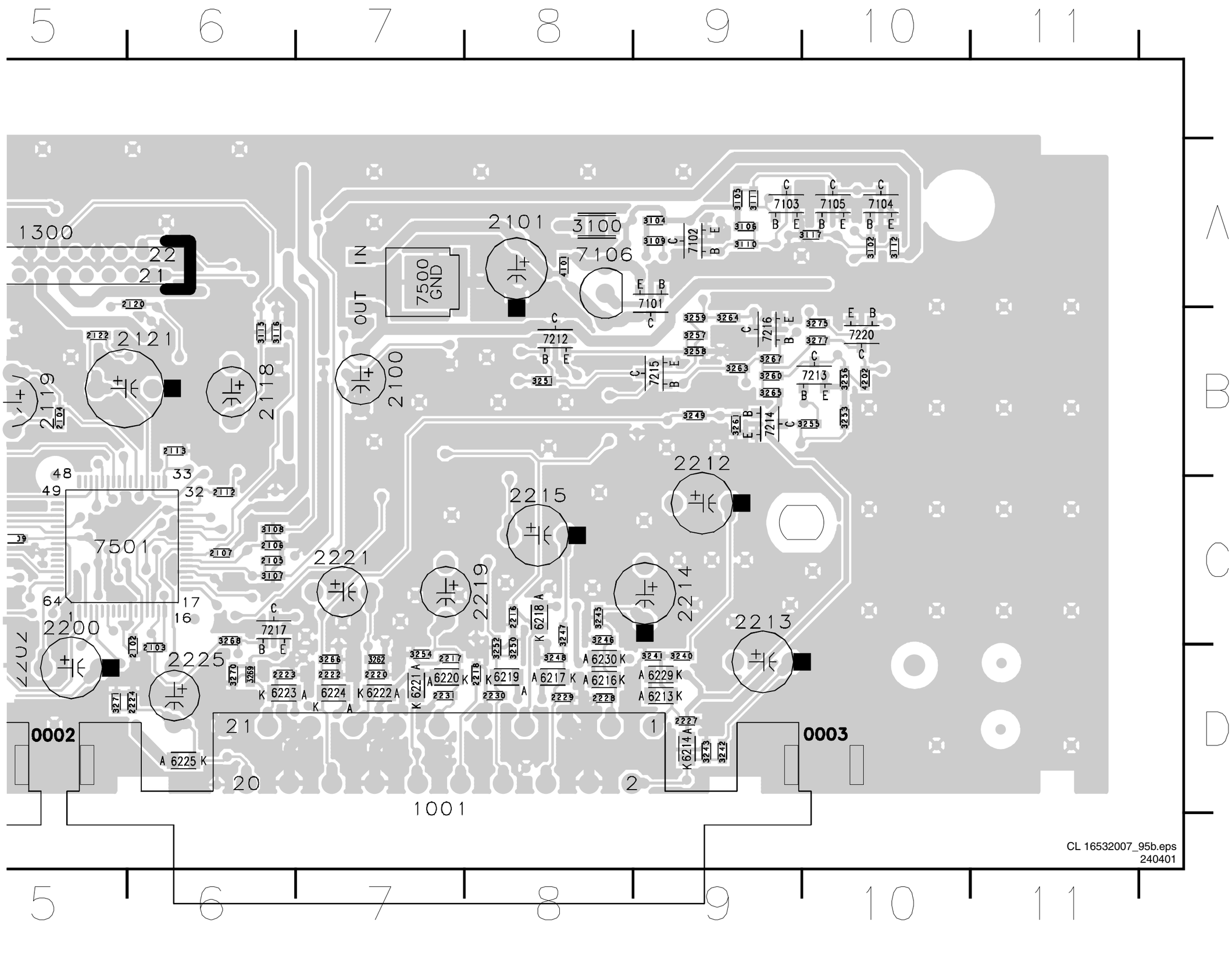
1000 D3	2116 A4	2213 C9	3102 A10	3205 C4	3225 C2	3245 C8	3265 B9	6200 D4	6221 D7	7205 A3
1001 D7	2117 B4	2214 C9	3104 A9	3206 C4	3226 A2	3246 C8	3266 D7	6201 D4	6222 D7	7206 B3
1300 A5	2118 B6	2215 C8	3105 A9	3207 C4	3227 D2	3247 C8	3267 B9	6202 D4	6223 D6	7207 A2
1302 C1	2119 B5	2216 C8	3106 A9	3208 D4	3228 A2	3248 D8	3268 C6	6203 D3	6224 D7	7208 A2
2100 B7	2120 A6	2217 D7	3107 C6	3209 D3	3229 B3	3249 B9	3269 D6	6204 D3	6225 D6	7209 C2
2101 A8	2121 B6	2218 D8	3108 C6	3210 D3	3230 D1	3250 D8	3270 D6	6205 C3	6227 D4	7210 B3
2102 D6	2122 B5	2219 C8	3109 A9	3211 C3	3231 B3	3251 B8	3271 D5	6206 D3	6228 D4	7211 B3
2103 D6	2200 C5	2220 D7	3110 A9	3212 D3	3232 C2	3252 D8	3272 C4	6207 D3	6229 D9	7212 B8
2104 B5	2201 D4	2221 C7	3111 A9	3213 C3	3233 B3	3253 B10	3273 C4	6208 D3	6230 D8	7213 B10
2105 C6	2202 D5	2222 D7	3112 A10	3214 D2	3234 B3	3254 D7	3275 B10	6209 D2	7101 A9	7214 B9
2106 C6	2203 C4	2223 D6	3113 B4	3215 C2	3235 D2	3255 B10	3276 A1	6210 D2	7102 A9	7215 B9
2107 C6	2204 C4	2224 D6	3114 B4	3216 D2	3236 B3	3256 B10	3277 B10	6211 D1	7103 A9	7216 B9
2108 B4	2205 D3	2225 D6	3115 B6	3217 D2	3237 B3	3257 B9	3278 A3	6212 D2	7104 A10	7217 C6
2109 C5	2206 D3	2226 D4	3116 B6	3218 C2	3238 B3	3258 B9	3279 A3	6213 D9	7105 A10	7218 C4
2110 B4	2207 D2	2227 D9	3117 A10	3219 A2	3239 B3	3259 B9	4101 A8	6214 D9	7106 A8	7219 A2
2111 A4	2208 D2	2228 D8	3200 D4	3220 B2	3240 D9	3260 B9	4102 A4	6216 D8	7200 D4	7220 B10
2112 C6	2209 D2	2229 D8	3201 D4	3221 B2	3241 D9	3261 B9	4103 A4	6217 D8	7201 C4	7500 A7
2113 B6	2210 D1	2230 D8	3202 D4	3222 B3	3242 D9	3262 D7	4200 C3	6218 C8	7202 C3	7501 C5
2114 A5	2211 D1	2231 D7	3203 C4	3223 B2	3243 D9	3263 B9	4201 A3	6219 D8	7203 C2	
2115 A4	2212 B9	3100 A8	3204 D4	3224 D2	3244 C4	3264 B9	4202 B10	6220 D7	7204 C2	



Layout SCART Board (Part 1 Top Side)



Layout SCART Board (Part 2 Top Side)



CL 16532007_95b.eps
240401

8. Alignments

Not applicable.

9. Circuit Descriptions and List of Abbreviations

Index of this chapter:
1. Introduction
2. Power Supply Unit (PSU).
3. Loader/Mono Board.
4. Audio Video (A/V) Board.
5. Front Display Board.
6. Abbreviations
7. IC Data

Notes:
- See also the SD4.0 SA_CH Service Manual (3122 785 12480).
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the diagrams in chapter 6 and 7. Where necessary, you will find a separate drawing for clarification.

9.1 Introduction

The DVD763SA is a model from the SACD 2002 'single disc' range. It uses a 2nd generation Philips SACD mono board, based on the Furore 2 DSD/DST decoder.
Below you will find a circuit description of the several modules.

9.2 Power Supply Unit

9.2.1 Introduction

This supply is a Switching Mode Power Supply (SMPS), which uses the control IC TY720xx to produce pulses to drive the power 'switch' (MOSFET). The TY720xx (IC7130) is a high performance, current mode controller for DC-to-DC converter applications.
The operation frequency varies with the circuit load. When the output power demand decreases, the switching frequency raises, with a maximum frequency of 125 kHz (defined by C2130 at pin 5). At this point, the internal VCO takes over and starts to decrease the switching frequency.
This has some benefits compared to a 'fixed frequency' flyback converter. The efficiency is better, which results in a lower power consumption.

9.2.2 Output Voltages

The following output voltages are present on connector 0201:
- Pin 1 and 2: +3V3_POWER.
- Pin 4: +12V_POWER
- Pin 5: +12STBY.
- Pin 7: +5VSTBY.
- Pin 9: -12V_POWER.
- Pin 11: -32V_POWER.

Note: The suffix 'STBY' indicates that the supply is not switched 'off' during Standby Mode. Power switching is done with the STBY_CTRL signal from the slave processor.

9.2.3 Operation

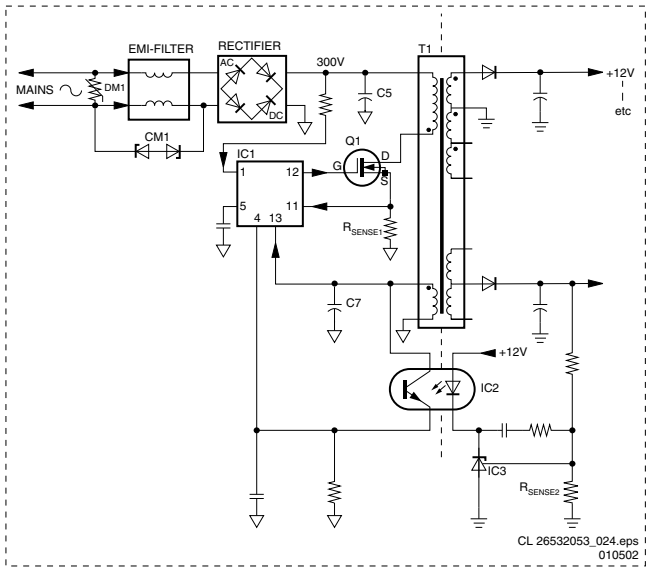


Figure 9-1 Power Supply

Mains Input Circuit
The bridge rectifier D6110 rectifies the mains voltage, after which C5 (2117) smoothens it. The DC voltage across this capacitor is the DC input voltage (approximately 300V), to pin 1 of transformer T1 (pin 9 of 5190) and pin 1 of IC1 (7130). The mains input also consists of a (differential mode) lightning protection DM1 (R3110) and a (common mode) lightning protection CM1 (D6114/15).

Start-up Circuitry
The rectified voltage from the bridge rectifier is connected to pin 1 of IC1. This voltage will charge the Vcc capacitor C7 (C2131). When this voltage, (at pin 13), reaches the start-up threshold of min. 15V, the control circuit starts to operate. After start-up, the control IC requires a sinking current, which the start-up circuitry cannot deliver. Therefore a take-over circuitry (a coupled winding of transformer T1) is present. The voltage at this point will take over the supply voltage at pin 13 of the IC1(7130).
If the take-over circuit does not function, IC1 (7130) will switch 'off' again at the minimal operating voltage of +8V. The whole operation cycle will repeat itself with audible hiccup sound if take-over is not present.

Secondary Voltage Sensing
The secondary voltage regulating circuit comprises of opto-coupler IC2 (7190), which isolates the error signal from the control IC on the primary side, and a reference component IC3 (7290, TL431).

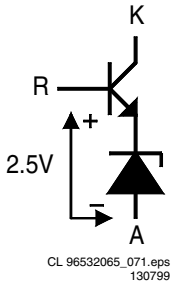


Figure 9-2 TL431

This reference component has two functions:
- A very stable and accurate reference diode
- A high gain amplifier.

When the output voltage increases (due to a reduction in the load), the voltage across RSENSE-2 (R3290/R3291) increases to above the internal reference voltage of 2.5V. The TL431 will conduct and the current through the opto-coupler will increase. This results in an increase of the voltage at pin 4 of IC1, which will reduce the 'on' time of Q1 (FET 7125). In the event of an output voltage decrease (due to an increase in the load), the control circuit will operate in the opposite way.

Primary Current Sensing
The current through FET Q1 will result in a voltage drop across RSENSE-1 (R3120-23). This line goes to pin 11 of IC7130, which is the current sense input. The higher the input voltage, the more the primary current is limited. In this way, the maximum output power of the power supply is limited.

Under-voltage Protection
If the supply voltage at pin 13 of IC7130 drops below 7.2V (typical), e.g. due to a shorted secondary voltage or excessive load, the drive pulse at pin 12 is disabled and the controller will switch 'off'.

Over-voltage Protection
An internal over-voltage protection circuitry continuously monitors the Vcc pin. If, after start-up, this voltage exceeds 40V, the internal latch circuit is triggered, the output buffer is disabled, and the SMPS goes into over-voltage protection. Now a complete restart sequence is required.
Note: If the event of the over-voltage situation remains present, the SMPS will go in sequence of protection, start-up, protection and the cycle repeats. This effect is highly audible.

9.3 Loader/Mono Board

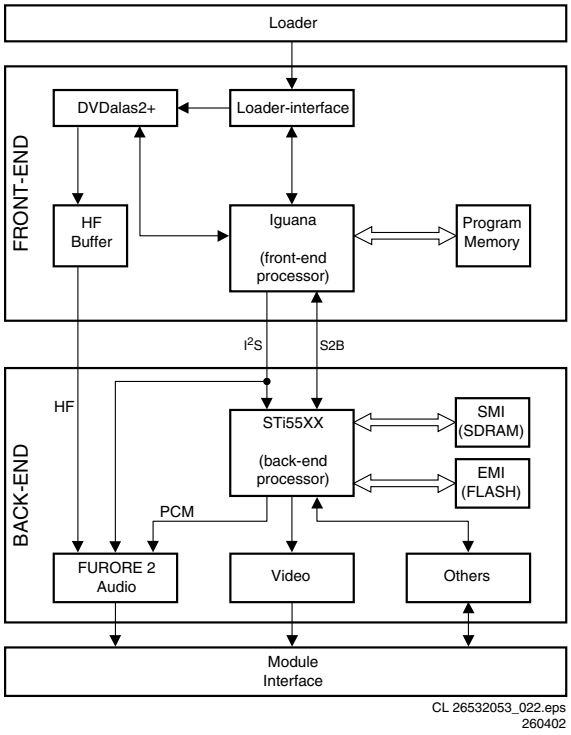


Figure 9-3 Block Diagram Loader/Mono board

The SD4.00_SA_CH (SACHI_4) is the 2nd generation Philips Architectural Standard Design of SACD mono board based on Furore 2, and will be used in the new generation of SACD players. It is designed in a multi-task way so that it can support the following optional main functions:
- SD4.00_SA_CH: Support SACD player with 5-disc changer.
- SD4.00_SA: Support SACD player with single-disc.
- SD4.00_CH: Support DVD player with 5-disc changer but without SACD playback.
- SD4.00_SA_I2C: Support SACD player with single-disc and I2C slave.

The SD4.00_SA_CH (SACHI_4) module consist of the following key components:
1. OPU: Mercury 2 Loader VAL6011/14 (slim type) for a single-disc SACD player, or DVD VAM6001/14 mechanism for a 5-disc SACD changer.
2. **Front-end:** M2 Basic Engine.
3. **Back-end:** DVD Host Processor STi55xx and Furore 2 SACD DSD/DST decoder.
4. **Power supply:** To convert the PSU voltages to the correct values.
5. **Reset circuit:** This circuit that the booting of the several devices on the mono board takes place in the correct order.

9.3.1 The Optical Pick-up Unit (OPU)

The Mercury 2 Loader has an optical unit consisting of two lasers:
- One for CD with a wavelength of 780 nm.
- One for DVD with a wavelength of 650 nm.

The TZA1033 (item 7105) controls the data from these lasers, and the supply to them.

9.3.2 Front-end: the Servo Part

The front-end consists of:
- The Loader interface
- The Servo Processor/Decoder

- The Interface/Program Memory

The Loader Interface

The TZA1033HL/K2 (or DVDALAS2plus, item 7105) is an analogue pre-processor and laser supply circuit. It contains data amplifiers and several options for radial tracking and focus control.
It is possible to optimise the dynamic range of this pre-amp/ processor combination for the LF servo and RF data paths. The gain in both channels is separately programmable. This will guarantee an optimal playability for all kind of discs.
Also, a dual laser supply is implemented, with fully automatic laser control including stabilisation and an ON/OFF switch, plus a separate supply pin for power efficiency.

The Servo Processor/Decoder

In the SD3.0 module, the servo signals were fed to the MACE2 servo processor, while the HF output signal was fed to the SAA7335 decoder. In the new SD4.0SA_CH module, these ICs are combined into one chip: the SAA7812 Iguana.
This chip contains the following blocks: channel decoder, block decoder, servo processor, and microcontroller.
The servo circuit in the SAA7812 (item 7207) takes care of the servo controls.
In a CD system, there are some twelve control loops active. About six of them are needed to adjust the servo error signals that is once per disc rotation. It also adjusts offsets, signal amplitudes, and loop gains (AGCs), to enlarge system robustness and to avoid expensive potentiometer adjustments in production.
The other six loops determine the laser spot position on the disc in the radial, axial (focus), and tangential directions.
It also has to take care that the spot accesses a required position as fast as possible. This access system consists of two parts, namely the actuator and the sled, which are (within a certain range) mechanically and electrically independent. Therefore, during an access, the servo has to control as well the actuator as the sled.
The analogue signals, from the diode pre-processor, are converted into a digital representation using A/D converters.
For the communication between the host processor (STi55xx) and the servo processor, the S2B bus is used. This bus supports full-duplex asynchronous communication.

The SAA7812 is also a combined CD/DVD compatible decoding device. The device operates with built in hardware for CD/DVD error correction and de-interleaving operations. It decodes EFM or EFM+HF signals directly from the laser pre-amplifier, including analogue front-end, PLL data recovery, demodulation, and error correction.

Its analogue front-end input (the channel decoder), converts the HF input signal to the digital domain via an 8-bit ADC, preceded by an AGC circuit to obtain the optimum performance from the converter. An external resonator clocks this block.
This subsystem recovers the data from the channel stream. It corrects asymmetry, performs noise filtering and equalisation, and finally recovers the bit clock and data from the channel using a digital PLL.
The demodulator part detects the frame synchronisation signals and decodes the EFM (14 bit) and EFM+ (16 bit) data and sub-code words into 8-bit symbols. Via the serial output interface, the I^2S data (audio and video) go to the DVD decoder STi55xx.

The spindle-motor interface provides both motor control signals from the demodulator and, in addition, contains a tachometer loop that accepts tachometer pulses from the motor unit. They drive the motor IC (BA6665FM, item 7300).

The SAA7812 has two independent microcontroller interfaces. The first is a serial I^2C-bus and the second is a standard 8-bit multiplexed parallel interface. Both of these interfaces provide access to 32 8-bit registers for control and status.

The Interface/Program Memory

The interface between front-end (SAA7812) and back-end (Sti55xx) is via:
- I2S bus (BCLK, DATA, WCLK, FLAG, SYNC and V4).
- S2B bus (RXD_S2B, TXD_S2B, CPR_S2B and SUR_S2B).
- Miscellaneous I/O ports (RSTNF= front-end reset, EANF= front-end processor boot select).

Service tip: These lines contain series resistors (47 or 100 Ω) for easy hardware debugging, and for EMC/noise reduction of the high-speed I2S lines.

The front-end processor SAA7812 (Iguana) has two boot modes: normal boot from flash memory, or serial mode.
The boot selection is via the EANF pin. The Iguana samples the EANF signal level once during boot-up. Once boot-up is completed, this pin is no longer used for this purpose.
However, in the SD4.0SA_CH circuit, the EANF is also connected to the flash memory. Therefore, when this pin is LOW, the lower 1Mbits of the memory is accessible. Conversely, when this pin is HIGH, the upper 1Mbits is accessible.
Under front-end normal operation, the program memory (less than 1Mbits in size) should reside in the lower bank. Therefore, the EANF pin should be LOW at all times. Since the actual flash memory used is 2Mbits, the upper 1Mbits is unused. This area is reserved for possible use by the front-end self-diagnostic software, or flash download application.

9.3.3 Back-end: the Digital Part

The back-end consists of:
- DVD back-end processor
- SACD DSD processor
- Audio output
- Video output
- Clock factory
- Miscellaneous

DVD Back-end Processor

The SD4.0SA_CH is designed for the Sti55xx family. Some of the DVD related features of these ICs are:

Processor overview

Function	STi5580	STi5588	STi5519
Basic CD/VCD/DVD decoding	X	X	X
Extra 2-channel of I2S output (PCMDATA3)	X	X	
Karaoke	X	X	
DTS	X	X	
Audio post processing (equalizer, level meter, etc)		X	
DVD audio		X	
Progressive scan at analog video output		X	

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Figure 9-4 Processor overview

The STi5580 has the same architecture as the STi5508 (used in earlier DVD generations), and is pin-to-pin compatible.
It works on 3.3 V (VDD), and comprises the following functions:
- Video decoder, which supports MPEG1 and MPEG2.
- Audio decoder that supports AC-3, MPEG1, MPEG2, DTS, PCM, S/PDIF, and MP3.
- PAL/NTSC video encoder with simultaneously Y/C, CVBS, and RGB/YUV outputs.
- The video encoder supports Closed Caption and allows MacroVision 7.0/6.1.
- Full screen On Screen Display (OSD) generator.
- Three on-chip PLLs to generate all necessary clocks (as reference the 27 MHz video clock is used).

Input

Input data comes from the I2S-bus. The front-end interface of this device, accepts DVD, CD and CD-DA information.

Signal Processing

For video, the input data stream is decoded to the appropriate MPEG, Sub Picture, and OSD data streams, after which they are fed to the PAL/NTSC encoder. This cell will convert the digital MPEG/Sub Picture/OSD stream into a standard base band signal and into RGB components. It handles interlaced and non-interlaced data, can perform CC/TXT encoding, and allows MacroVision copy protection.

For audio, the processing cell is a fully compatible DTS, Dolby Digital (AC-3), MPEG1, MPEG2, PCM decoder, capable of decoding 5.1 and 2 channel streams.

Output

For video, six analogue output pins are available on which CVBS, S-VHS (Y/C), and RGB signals are present. They go, via a buffer, to connector 1703. As an option, a digital YUV output is available at connector 1704.

External Memory

The STi55xx family is capable of accessing external memory via three buses:

- **The enhanced memory interface (EMI).** This interface is configurable and can be used to access Flash, ROM, and various flavours of DRAM.
- **The shared memory interface (SMI).** The SMI is only used to access SDRAM. The SMI is connected to a 64Mbits (4M x 16bit) 7.5ns SDRAM (item 7500). The SDRAM has the following functions:
  - It is used by the MPEG video decoder as a frame buffer,
  - It holds the software and the variables used by it.
- **The I2C bus.** Via this bus, the NVRAM (or EEPROM) is accessible. This memory is used to store user settings, player settings, and region code. As the STi55xx I/O-lines are potentially unable handle 5V inputs, a voltage level shifter is foreseen for all I2C-busses. This circuit will isolate the STi55xx I2C ports (3.3V) from the system I2C bus (5V). See figure below.

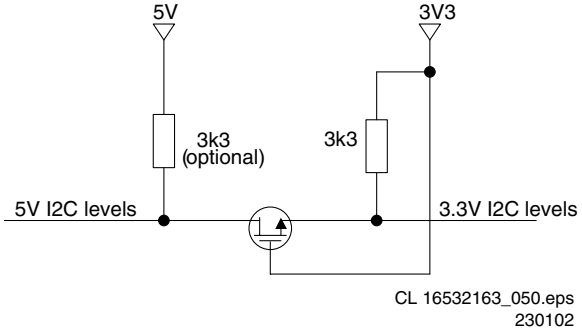


Figure 9-5 I2C voltage level shifter

The SACD DSD processor

The Furore-IC is a one-chip design, containing all the hardware that is required for SACD processing. It is intended to interface with the STixx-family DVD video decoders.
The Furore-IC contains a memory interface to support an external 16 or 64 Mbit SDRAM.
During SACD application, the STi55xx serves as a host, whereby the Furore is controlled via the EMI interface. The Furore processing part is not used during all other play modes. In these modes, the PCM audio signals are fed through the Furore to the appropriate DAC.

Block diagram

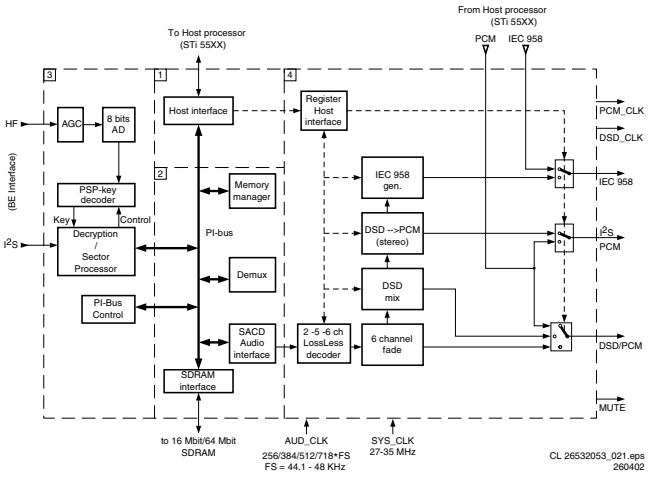


Figure 9-6 Block diagram Furore

We can divide the Furore-IC in four main parts (see block diagram):

1. **Host interface.** This is the link between the host bus and the internal registers and memory bus. It also supplies the general reset signal (HW and SW) and the interrupt signals.
2. **Data processing.** All modules and peripherals in this part are connected to a so-called PI-bus. It is beyond the scope of this manual to go more in detail on this subject.
3. **Copy protection.** On every SACD disc, a PSP-signal is recorded. The player can only play a disc if a valid PSP-signal is detected. This PSP-key is recorded, via a special mechanism, in the EFM-signal on the disc. To detect this key, the analogue HF-signal from the optical pick-up unit is fed directly to the Furore-IC. Via an AGC, the signal is fed to an ADC. The digitised HF signal is then fed to a block where key is encrypted. Control of this process is done via the host interface (sector processor).
4. **DSD decoding and post processing.** In this part, all processing is done to generate a DSD and/or an I^2S stream (from the de-multiplexed stream coming from the data processing block), in such a way that it can directly be connected to a DA-converter. All processing is done on 384*FS.

Interfaces

- **Basic Engine Interface:**
  - Data input interface. The Basic Engine Interface (I2S) is connected to the output of the SAA7335 (HD61) high speed CD decoder.
  - Analogue HF input. The analogue HF input, coming from the optical pickup unit (OPU), is also fed to the Furore-IC, to extract the copy-protection information PSP (Pit Signal Processing = invisible data is stored on to disc, which is required to decrypt the encrypted content).
- **SDRAM Interface:** The SDRAM interface forms a glue less interface to one 64 Mbit SDRAM device. The interface takes care for the power-up sequence, mode programming and refreshing of the SDRAM devices. This is hard coded in the interface and does not have to be controlled by the host.
- **Audio data input/output Interface:**
  - DSD/PCM combined data output. DSD_PCM: Output intended for a combined 6-channel DSD (SACD) and PCM (DVD-CDDA) DAC. Switching between the PCM data coming from the STi55xx, and the internal generated DSD signals, is done in the Furore IC.
  - Stereo DSD only output. DSD_stereo: 2-channel DSD output with stereo down mix in the case of 5- and 6-channel, and normal stereo in case of 2-channel DSD mode.

– Stereo PCM data output. Two possible stereo sources can be selected as stereo PCM output:
  1. Stereo PCM coming from the STi55xx via the PCM input on Furore.
  2. Stereo or down-mix-PCM derived via a decimation filter from the SACD-DSD signal.
– Digital audio output interface (IEC958). The IEC958 format is intended to connect the DVD736SA to a digital receiver. No DSD signals are defined for IEC958, therefore the 'DSD-->PCM converted' signal is transmitted. Following two types of signals are possible on the digital interface:
  1. IEC958 data coming from the STi55xx.
  2. IEC958 data (stereo or down-mix-PCM) derived via a decimation filter from the SACD-DSD signal.
– Clock + reset input. Two different processing clocks and a reset pulse are needed:
  1. Sys_clk: System clock for data processing part, frequency can be 27 MHz or 768*FS.
  2. 384*FS: Processing clock for LLD and post processing.
  3. RESETn is an asynchronous reset and should be low for at least 1 period of DSD_CLK.

Memory
- SDRAM.
  – The size of the SDRAM is 64 Mbit.
  – The SDRAM (items 7500 and 7502) has the following functions:
  – It is used by the MPEG video decoder as a frame buffer,
  – It holds the software and the variables used by it.
- **Flash-ROM.** Two 2MB Flash-ROMs (items 7402 and 7403) hold the DVD firmware, and are controlled by pin 186 (FLASH_OEN) of the STi55xx. It must be able to perform a download (by disk or OS-link) in a Flash-only system.
- EEPROM. User settings, player settings, and region code are stored in a 32 Kb I^2C EEPROM.

Audio Output

The audio interfaces available in SD4.0SA_CH are I2S and S/PDIF for digital audio output, and I2S karaoke microphone input.
In SACD player, two types of DACs (that are PCM DAC and high end DSD DAC), are used on AV board.
The audio data path to both DACs is routed via the Furore 2.

I2S audio

The STi55xx is capable of 6-channel I2S output. These channels can be configured to output 5.1 Dolby Digital, DTS, etc.
- PCM_OUT0: Left and Right.
- PCM_OUT1: Centre and LFE (subwoofer).
- PCM_OUT2: Left and Right surround.

Two additional channels (available in STi5580 and STi5588) are capable of providing down-mixed stereo.

S/PDIF

The S/PDIF signal level (pin 57, SPDIF_OUT) is 5V TTL at module interface. To meet the complete S/PDIF specifications, an external de-coupling circuit (item 7720, diagram M7) is implemented.

I2S karaoke (optional)

The STi5580 and STi5588 have built-in karaoke processing. The internal karaoke block accepts I2S signal, acting as the master by generating the required KOKPCMCLK frequency. This frequency is always 1/4 the music sampling frequency. An external analogue-to-digital converter (ADC), acting as slave, is required to convert the microphone signals to I2S signals.

CD-DA/DVD Data Path

The data path for CD-DA and DVD is as follows:
- I2S data from the M2 basic engine enters the STi55xx.
- The STi55xx processes the data, and sends the 6 PCM output channels to Furore 2. The LeRi channels are directly passed to the AV board also.
- The switch matrix of the Furore 2 sends the two incoming stereo PCM channels (LeRi) to the AV board.
- The switch matrix of the Furore 2 sends the six incoming PCM channels to the high end DAC board.
- The mute signal from the STti55xx is directly passed to the AV board. This requires a patch on the mono board.
- The IEC958 output of the STi55xx is fed directly to AV board.

The clock distribution is as follows:
- The master clock 384FS is received from the high end DAC board.
- From this clock the 27 MHz clock for STi5580 and the Furore 2 is derived (Video clock).
- From the 27 MHz clock the audio clock (256FS) is derived. The STi55xx and Furore 2 use this clock. For CD-DA FS amounts to 44.1 KHz, for DVD 48 or 96 KHz.
- In case of CD-DA, the high end DAC uses its internal clock (384FS). In case of DVD, the switch matrix of Furore 2 sends the audio clock (256FS) to the high end DAC on AV board.
- The AV board receives the 256FS clock.

Selection of the audio clock is done in the clock factory. For a description of the clock factory, see paragraph 'Clock Factory'.

SACD Data Path

The data path for DSD/DST is as follows:
- I2S data from the basic engine enters the Furore 2.
- The Furore 2 processes the data. This results in 6 DSD/DST channels.
- The switch matrix of the Furore 2 sends the 6 DSD/DST channels to the high end DAC on AV board.
- The 6 DSD/DST channels are down mixed to a stereo PCM signal.
- The switch matrix of the Furore 2 sends the stereo PCM signal to the AV board.
- The mute signal from the STi55xx is directly passed to the AV board. This requires a patch on the mono board.

The clock distribution is as follows:
- The master clock 384FS is received from the high end DAC on AV board.
- From this clock the 27 MHz clock for Sti55xx and Furore 2 is derived (video clock).
- From the 27 MHz clock the audio clock (256FS) is derived. The STti5580 and Furore 2 use this clock.
- The high end DAC on AV board uses its own XTAL clock (384FS). The 256FS clock to the DAC board is switched off, to prevent for interference.
- The AV board receives the 256FS clock.

Selection of the audio clock is done in the clock factory. For a description of the clock factory, see paragraph 'Clock Factory'.

Video Output

Digital video (optional)

Digital YUV output is routed directly from STi55xx ports to a 24-pin connector (item 1704). From the same connector, the HSYNC, VSYNC and 27MHZ_CLK signals are available. The digital YUV connector is the interface to external video processing devices; such as high quality progressive scan codex and high quality video DAC.

Analogue video

The STi55xx is capable of 6-channel analogue video. Three channels (pins 25, 26 and 27) are RGB or YUV format, while the other three channels (pins 32, 33 and 34) are Y, C, and CVBS.
A video output buffer (see diagram M7, e.g. item 7701 for R) is implemented: an 8MHz/16MHz selectable filter stage and a 75Ω drive stage.

Clock Factory

One clock factory is implemented to support all clocks required by the Furore 2. The various master clock, which depends on whether SACD is present, is used for SD4.00_SA_CH. The clock factory of SD4.00_SA_CH is showed in Figure 8-2.

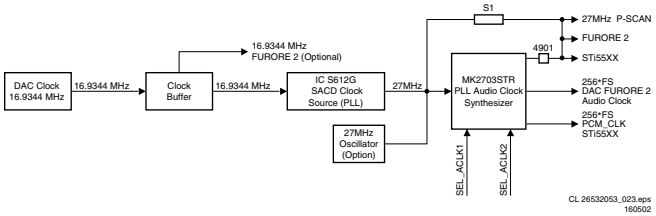


Figure 9-7 Block diagram clock factory

For the SACD player, the clock system is a DAC master clock system. For non-SACD player, the clock system is a mono board master clock system.
The Furore 2 supports clock 256*FS/384*FS/512*FS. The most convenient value in the market is 16.9344 MHz (384*FS, FS=44.1KHz). Therefore, the master clock on the SD4.00_SA_CH mono board is the 384*FS coming from the A/V board. The 384*FS (16.9344 MHz) from the DAC clock, must always be present. It is buffered before it is sent to the Furore 2 and the rest of the clock factory. The IC S612G delivers a 27 MHz system clock.
The Furore 2 and Sti5580/Sti5588 (Video) use this clock. It is used to derive the PCM audio clocks 256*FS by the MK2703STR. This IC is also used to buffer the incoming 27 MHz clock.
The communication between the Sti55xx and the Furore 2 is asynchronous.
To support non-SACD playback, an on-board 27MHz oscillator delivers the master clock for SD4.00_SA_CH mono board.

Miscellaneous

Most general IO ports are connected directly to the module interface. Compared with the SD3.0 module, some on-board circuits are removed, as it made more sense (and more cost effective) to implement these circuits externally.

SCART Status Signal

The SCART0 and SCART1 signals are directly available at the module interface, where the 0_6_12V signal is generated. See table below:

Table 9-1 0_6_12V SCART status truth table

Function	PIO3_6 (SCART0)	PIO3_7 (SCART1)	0_6_12V (at SCART connector)
TV display	1	1	0V
TV display	0	1	0V
16:9 aspect ratio	1	0	+6V
4:3 aspect ratio	0	0	+12V

Mute

The audio MUTE signal (active 'high') is directly available at the module interface.

Service

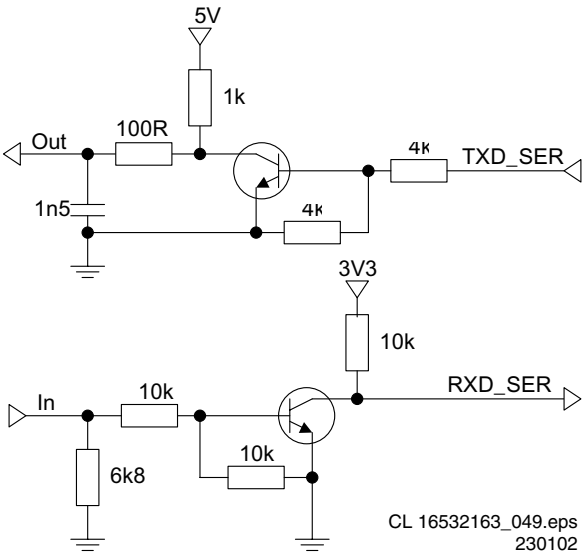


Figure 9-8 Service Port Buffer

The service port (see diagram M5) is simplified to reduce cost. The unused RTS and CTS lines are no longer connected. A transistor buffer (item 7508) is used instead of the Schmitt Trigger buffer (item 7501).
The overall loading and driving capability of the RS-232 emulator port is not greatly changed. However, as a precaution, the Schmitt Trigger circuit remains in the layout as an optional implementation.

This SD4.0SA_CH has the same ComPair connector as in previous DVD generations. Flashing of the application-SW is not possible with the ComPair cable, except with a CD-R disc. For sets with Mask-ROM software, replace it with a programmed Flash (available via your Philips Service organisation).

Power Supply (diagram M7)

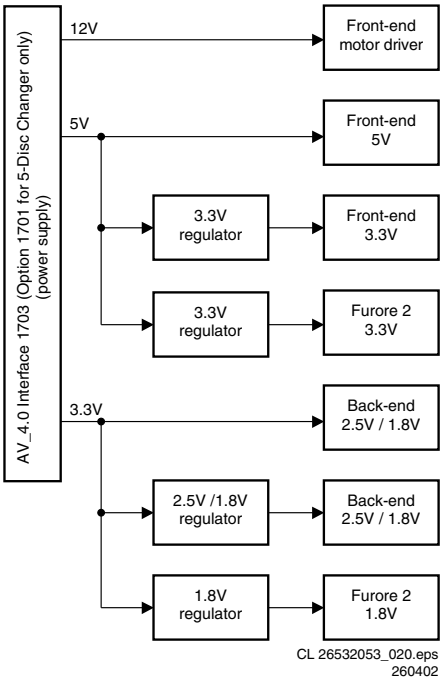


Figure 9-9 Mono Board Power Supply Block Diagram

The main power supplies to the module are 3.3V, 5V, and 12V (input via connector 1703).

The SACD DSD/DST decoder Furore 2 uses 1.8V for its core and analogue portion, and 3.3V for its interface. The on-board 1.8V linear regulator LF18ABDT and 3.3V linear LD1117DT33 are used to generate 1.8V and 3.3V power supply respectively. The back-end section mainly uses the 1.8V or 2.5V and 3.3V, which depend on which back-end processor is used. The on-board linear regulators LF25ABDT or LF18ABDT are used to generate the 2.5V (or 1.8V) required by the STi55xx.
The front-end section mainly uses the 5V and 12V. An on-board linear regulator LD1117DT33 can be used to generate the 3.3V required by the front-end. The 12V is used by the motor and servo drivers.

Reset Circuit

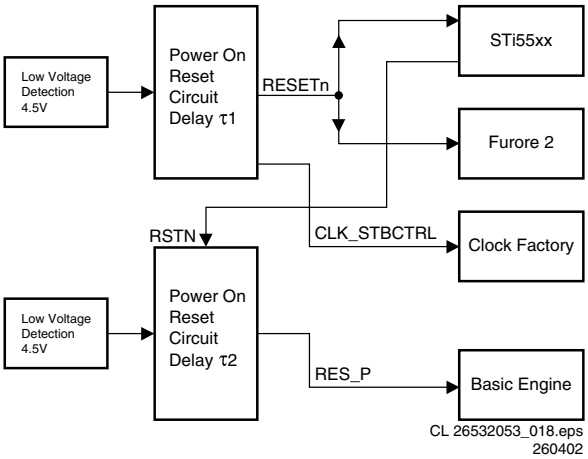


Figure 9-10 Block diagram of reset circuit

This reset circuit takes care that booting the different devices on the mono board takes place in the correct order. The correct reset order is:

1. The Power On Reset circuit (delay t1) creates a reset signal 'RESETn' to reset the STi55xx and Furore .
2. In the meantime, the Power On Reset circuit (delay t1) creates a reset signal 'CLK_STBCTRL', which is inverted to 'RESETn', to enable the Clock Factory.
3. Then, the Power On Reset circuit (delay t2) generates a reset signal 'RES_P' to reset the Basic Engine.
4. The STI55xx can now reset the Basic Engine via 'RSTN'.

9.4 Audio/Video (A/V) Board

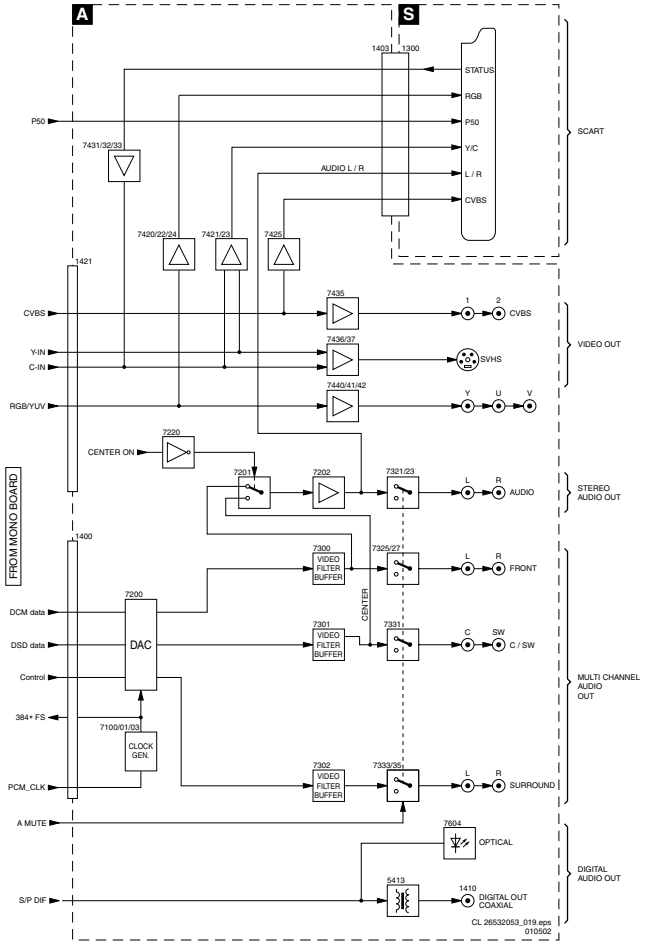


Figure 9-11 Block diagram A/V board

This board is the interface panel between the DVD-player and its peripherals. See also block diagram in Chapter 6.

9.4.1 Control

The control of the A/V board is done by the I²C-decoder IC7104 (see table below):

Table 9-2 Control lines overview IC7104

Description	Pin	Hi	Lo
CLK_SEL	12	Internal clock	External clock
DAC_RESET	10	Normal	Reset
CENTER_ON	9	?	?

9.4.2 Video

The analogue video signals from the Mono Board are buffered before they are fed to the several output connectors (SCART, Cinch, and SVHS). The video output from the A/V Board is RGB/YUV, YC, and CVBS.

9.4.3 Audio

The digital audio signals are fed to a 6-channel DAC CS4362 (item 7200, 48-pin LQFP) for the audio output. This DAC accepts both DSD and PCM data streams.

There is a control line from the STi55xx, called CENTRE_ON, which is used to switch between the centre channel and front channels for both SACD- and DVD modes.

9.5 Control and Display

9.5.1 Control

The key component on this board is the (slave) microprocessor (item 7101). It runs on an 8 MHz system clock generated with a ceramic resonator (item 1128) and has a reset circuit that is triggered by the +5VSTBY voltage.
After the RESET pulse (active LOW), the STB_CTRL line (pin 21, item 7101) will release the reset of the host uP (on the mono board) via the switched 3V3 supply. See circuit around item 7409 on mono board (diagram M4).

Other slave processor functions are:
- Generation of a scanning grid for the keys.
- Generation of the display grid and segment scanning.
- Generation of a square signal to generate the filament voltage for FTD display.
- Input for RC5/6 remote control protocol. The logic is HIGH > 4.5V and LOW < 0.3V.

Standby LED
Transistor 7105 drives the Standby LED. When the STBY_LED signal from the slave processor is ‘high’, the LED is ‘off’.

Key Matrix
When a key on the local keyboard is pressed, the signal at the scanning pins of the microprocessor (pins 26 to 37) goes from +5V to 0V.

IR Receiver
The IR controller in the slave processor handles both RC5 and RC6 signals. The logic is +5V for ‘high’ and 0V for ‘low' (measure at pin 22).

P50 Interface
P50 (or Easylink) is a bi-directional serial interface for communication between video equipment. This communication goes via pin 10 of the SCART-bus.

9.5.2 Display

The slave uP provides a negative DC switching voltage, to drive the 11-segment FTD. As the display consists of eleven segments, there are eleven grid signals (G1-G11) controlling each respective grid.
The slave processor has an internal square signal generator (42 kHz with duty cycle 45/55), to generate the AC filament voltage. TS7103 and 7106 amplify the square signal before it is applied to the display (VAC= VFIL_1 - VFIL_2, VRMS ≈ 3.5 V).
The necessary power supply of -26 V is derived (via zener diode 6101) from the -32V supply, which is coming directly from the Switching Mode Power Supply (SMPS).

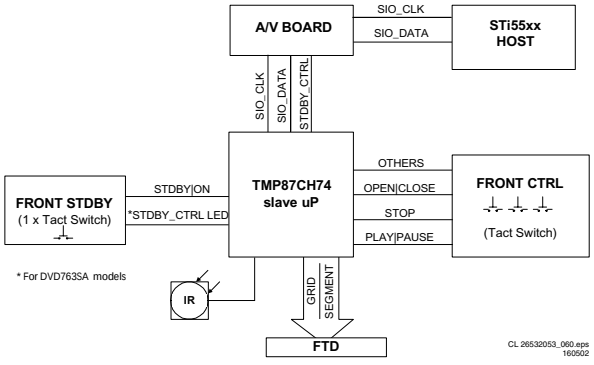


Figure 9-12 Slave processor interface

The block diagram above, illustrates the interfaces of the slave uP. The start-up sequence is as follows:

1. The required IC voltage is the +5VSTBY, which is present during Standby Mode.
2. When the RESET circuit (item 7102) is triggered by the +5VSTBY, the slave uP initialises.
3. This will set the STDBY_CTRL signal to LOW, which will switch on the +3V3 and +5V.
4. Once these voltages are provided, the host uP (on the mono board) will reset.
5. Now, the host uP will initialise, and indicate the slave uP to activate the Standby Mode (STBY_CTRL) signal.
6. The player wakes up from the Standby Mode when any button is pressed on the front panel, or when the 'Power' button is pressed on the Remote Control.

Note: The slave uP will not reset successfully, if the 8MHz clock oscillator has not stabilised (check on pin 8 of IC7101).

9.6 Abbreviation list

ADC	Analogue to Digital Converter
AGC	Automatic Gain Control
ASD	Architecture and Standard Design
AM	Amplitude Modulation
BE	Basic Engine
ComPair	Computer aided rePair
CD-DA	CD Digital Audio
CS	Chip Select
CVBS	Composite Video Blanking and Synchronisation
DAC	Digital to Analogue Converter
DAIO	Digital Audio Input Output
DEMUX	De-multiplexer
DENC	Digital Encoder
DFU	Direction For Use: description for the end user
DNR	Dynamic Noise Reduction
DRAM	Dynamic Random Access Memory
DSD	Direct Stream Digital
DSP	Digital Signal Processing
DST	Direct Stream Transfer (= loss less compressed DSD signal)
DTS	Digital Theatre Sound
DVD	Digital Versatile Disc
EEPROM	Electrically Erasable and Programmable Read Only Memory
EFM	Eight to Fourteen bit Modulation
EMI	External Memory Interface (STi55xx)
FFC	Flat Foil Cable
FLASH	Flash memory
HPF	High Pass Filter
HW	Hardware
I2C	Integrated IC bus (signals at 5V level)
I2S	Integrated IC Sound bus (signals at 3.3V level)
IC	Integrated Circuit
IF	Intermediate Frequency
IRQ	Interrupt Request
KOK	Karaoke
LFE	Low Frequency Effect (= subwoofer)
LLD	Loss Less Decoder
LPCM	Linear Pulse Code Modulation
LRCLK	Left/Right clock
LVTTL	Low Voltage Transistor Transistor Logic (3.3V logic)
M2	Mercury 2 Basic Engine
MACE	Mini All Compact Disc Engine
MPEG	Motion Pictures Experts Group
NC	Not Connected
NVM	Non Volatile Memory (= IC containing TV related data e.g. alignments)
OC	Open Circuit
OPU	Optical Pick-up Unit
PCB	Printed Circuit Board (see PWB)
PCM	Pulse Code Modulation
PCM_CLK	Audio system clock for DAC
PCM_OUTx	Audio serial output data
PSP	Pit Signal Processing
PSU	Power Supply Unit
PWB	Printed Wiring Board (see PCB)
RAM	Random Access Memory
RGB	Red, Green and Blue colour space
ROM	Read Only Memory
S2B	Serial to Basic Engine (= communication bus between host- and servo processor)
SCL	Serial Clock I2C
SCLK	Audio serial bit clock
SDA	Serial Data I2C
SDRAM	Synchronous DRAM
SMI	Shared Memory Interface
S/PDIF	Sony Philips Digital InterFace
SRAM	Static RAM
STBY	Standby
SVCD	Super Video CD
SW	Software
THD	Total Harmonic Distortion
TTL	Transistor Transistor Logic (5V logic)
uP	Microprocessor
VAL	Video Audio Loader
VCD	Video CD
Y/C	Luminance (Y) and Chrominance (C) signal
YUV	Component video

9.7 IC Data

In this paragraph, the internal block diagrams and pinning are given of ICs that are drawn as 'black box' in the electrical diagrams (with the exception of 'memory' and 'logic' ICs).

9.7.1 Diagram Power Supply

TY72011P2 Block Diagram (item 7130)

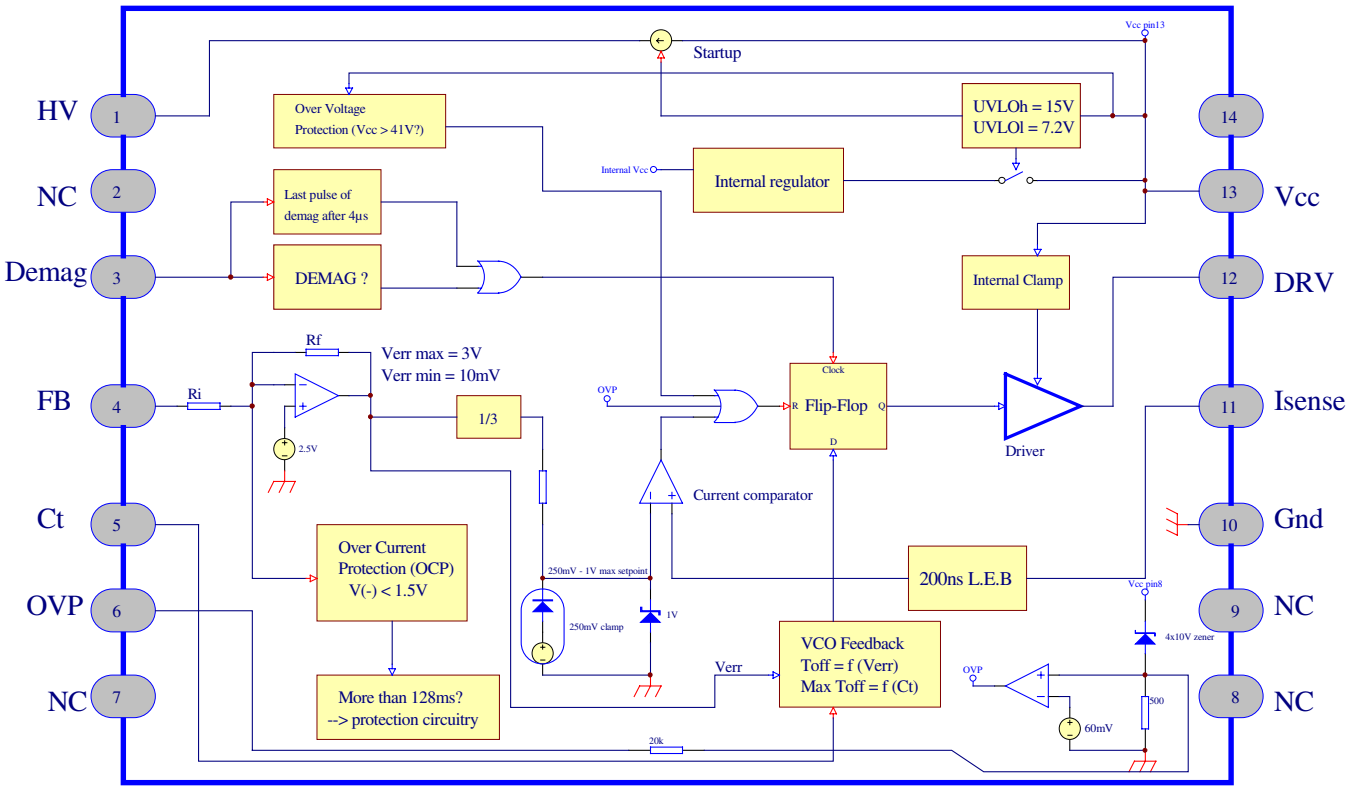
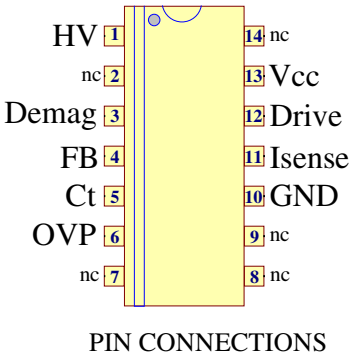


Figure 9-13

TY72011P2 Pinning (item 7130)



PIN CONNECTIONS

Figure 9-14

10. Spare Parts List

Various

Various

0001	3139 247 55711	ASSY FRONT DVD763EU
0095	3139 247 55591	ASSY TRAY COVER DVD763
0098	3139 243 10101	FILTER FTD DVD870L
0120	3139 247 55421	BUTTON NAVI DVD743 PPT
0148	3139 247 55751	ASSY FRAME DVD763 EU
0250	3139 247 55621	BACK PLATE DVD763EU PNT PRT
0300	3139 247 55511	COVER TOP DVD743 PPT
0350	3139 238 02051	PROD. ASSY RC19237004/01H PKD
0360▲	4822 321 11196	MAINS CORD 20/21"
0360▲	4822 321 11207	MAINS CORD FOR /05x
0365	3103 308 92610	CABLE AUDIO 2X2RCA MALE 1.5MTR
0366	4822 321 61579	VIDEO-CABLE
0372	2422 076 00468	CABLE SCART 1M1 SCART 21P BK B
0375	3139 246 11801	IFU DVD763/00X
0375	3139 246 11881	IFU DVD763/02X
0375	3139 246 11911	IFU DVD763/05X
1010	3122 427 23251	FFC FOIL 30P/100/30P BD 1MMP
1104	3139 110 36071	FFC FOIL 30P/100/30P BD 1MMP
1107	3139 110 36281	FFC FOIL 22P/080/22P BD 1MMP

SD 4.00SA_CH Module

Various

0001	9305 023 61114	VAL6011/14

AV PWB

Various

1100	9322 179 99668	OPA2228U
1400	2422 025 17433	CON BM V 30P F 1.00 FFC 0.3 B
1401	2422 026 05189	CON BM CINCH H 4P F YEWHRD B
1402	2422 026 05088	CON BM CINCH H 6P F B
1403	4822 265 11154	52030-2210 (22P)
1408	2422 026 05188	CON BM MDIN H 3P F TCS7927 B
1409	2422 026 05191	CON BM CINCH H 3P F RDBUGN B
1410	4822 267 31626	
1420	2422 025 10772	CON BM V 12P M 2.00 PH B
1421	2422 025 17433	CON BM V 30P F 1.00 FFC 0.3 B
1422	2422 025 17467	CON BM V 8P M 2.50 MIS B

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2100	2238 586 59812	0603 50V 100NP80M
2101	4822 122 33761	22pF 5% 50V
2102	4822 126 11785	0603 50V 47P PM5
2103	4822 122 33752	15pF 5% 50V
2104	4822 122 33752	15pF 5% 50V
2105	4822 122 33761	22pF 5% 50V
2106	4822 122 33761	22pF 5% 50V
2107	4822 122 33752	15pF 5% 50V
2108	2238 586 59812	0603 50V 100NP80M
2109	4822 124 40248	10µF 20% 63V
2110	2238 586 59812	0603 50V 100NP80M
2111	2238 586 59812	0603 50V 100NP80M
2200	2238 586 59812	0603 50V 100NP80M
2201	4822 124 40248	10µF 20% 63V
2202	4822 124 21913	1µF 20% 63V
2203	2238 586 59812	0603 50V 100NP80M
2204	2238 586 59812	0603 50V 100NP80M
2205	4822 124 21913	1µF 20% 63V
2206	2238 586 59812	0603 50V 100NP80M
2207	4822 124 40433	47µF 20% 25V
2208	2238 586 59812	0603 50V 100NP80M
2209	4822 124 21913	1µF 20% 63V
2210	2238 586 59812	0603 50V 100NP80M
2211	4822 124 41584	100µF 20% 10V
2212	2238 586 59812	0603 50V 100NP80M
2213	2238 586 59812	0603 50V 100NP80M
2214	2238 586 59812	0603 50V 100NP80M
2215	2238 586 59812	0603 50V 100NP80M
2216	2238 586 59812	0603 50V 100NP80M
2217	4822 124 41584	100µF 20% 10V
2218	4822 124 40433	47µF 20% 25V
2219	2238 586 59812	0603 50V 100NP80M
2220	2238 586 59812	0603 50V 100NP80M
2300	2238 586 59812	0603 50V 100NP80M
2301	4822 126 14249	560pF 10% 50V CASE0603
2302	2020 552 94427	0603 50V 100P PM5 R
2303	2238 586 59812	0603 50V 100NP80M
2304	2020 552 94427	0603 50V 100P PM5 R
2305	4822 124 41584	100µF 20% 10V
2306	4822 126 14249	560pF 10% 50V CASE0603
2307	2020 552 94427	0603 50V 100P PM5 R
2308	4822 126 14249	560pF 10% 50V CASE0603
2309	2020 552 94427	0603 50V 100P PM5 R
2310	4822 124 41584	100µF 20% 10V
2311	4822 126 14249	560pF 10% 50V CASE0603
2312	2238 586 59812	0603 50V 100NP80M
2313	2020 552 94427	0603 50V 100P PM5 R
2314	4822 126 13881	470pF 5% 50V
2315	2020 552 94427	0603 50V 100P PM5 R
2316	2238 586 59812	0603 50V 100NP80M
2317	2020 552 94427	0603 50V 100P PM5 R
2318	4822 126 13881	470pF 5% 50V
2319	2020 552 94427	0603 50V 100P PM5 R
2320	4822 124 41584	100µF 20% 10V
2321	2020 552 94427	0603 50V 100P PM5 R
2322	2020 552 94427	0603 50V 100P PM5 R
2323	4822 126 13881	470pF 5% 50V
2324	2020 552 94427	0603 50V 100P PM5 R
2325	4822 124 41584	100µF 20% 10V
2326	4822 126 13881	470pF 5% 50V
2327	2020 552 94427	0603 50V 100P PM5 R
2328	4822 126 13881	470pF 5% 50V
2329	2020 552 94427	0603 50V 100P PM5 R
2330	2238 586 59812	0603 50V 100NP80M
2331	2020 552 94427	0603 50V 100P PM5 R
2332	2238 586 59812	0603 50V 100NP80M
2333	4822 124 41584	100µF 20% 10V
2334	2020 552 94427	0603 50V 100P PM5 R
2335	4822 126 13881	470pF 5% 50V
2336	2020 552 94427	0603 50V 100P PM5 R
2337	2020 552 94427	0603 50V 100P PM5 R
2338	4822 126 13881	470pF 5% 50V
2339	2020 552 94427	0603 50V 100P PM5 R
2340	3198 016 31020	0603 25V 1nF
2341	3198 016 31020	0603 25V 1nF
2342	3198 016 31020	0603 25V 1nF
2343	3198 016 31020	0603 25V 1nF
2344	3198 016 31020	0603 25V 1nF
2345	3198 016 31020	0603 25V 1nF
2346	4822 124 41584	100µF 20% 10V
2347	2020 552 94427	0603 50V 100P PM5 R
2348	4822 126 13881	470pF 5% 50V
2349	2020 552 94427	0603 50V 100P PM5 R
2350	3198 016 31020	0603 25V 1nF
2351	3198 016 31020	0603 25V 1nF
2352	4822 124 11912	220µF 20% 6.3V
2353	4822 124 11912	220µF 20% 6.3V
2402	4822 124 40433	47µF 20% 25V
2404	4822 124 40433	47µF 20% 25V
2405	4822 124 80875	220µF 20% 25V
2406	4822 124 80791	470µF 16V 20% 105C DXH=8X11.5
2408	4822 124 40207	100µF 20% 25V
2409	4822 124 40207	100µF 20% 25V
2410	3198 017 42230	0603 50V 22nF COL
2411	4822 126 13883	220pF 5% 50V
2412	4822 126 13883	220pF 5% 50V
2413	3198 017 44740	0603 10V 470nF COL
2414	4822 126 13883	220pF 5% 50V
2415	4822 126 13883	220pF 5% 50V
2417	4822 124 41584	100µF 20% 10V
2418	4822 124 40248	10µF 20% 63V
2419	4822 124 81144	1000µF 16V
2420	4822 126 13883	220pF 5% 50V
2421	4822 126 13883	220pF 5% 50V
2422	4822 126 13883	220pF 5% 50V
2423	2238 586 59812	0603 50V 100NP80M
2424	4822 124 40248	10µF 20% 63V
2425	4822 126 11785	0603 50V 47P PM5
2426	2238 586 59812	0603 50V 100NP80M
2427	4822 126 11785	0603 50V 47P PM5
2428	5322 126 11583	10nF 10% 50V 0603
2429	4822 124 41584	100µF 20% 10V
2430	2238 586 59812	0603 50V 100NP80M
2431	2238 586 59812	0603 50V 100NP80M

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3100	4822 051 30101	100Ω 5% 0.062W
3101	4822 051 30101	100Ω 5% 0.062W
3102	4822 051 30101	100Ω 5% 0.062W
3103	4822 051 30101	100Ω 5% 0.062W
3104	4822 051 30101	100Ω 5% 0.062W
3105	4822 051 30101	100Ω 5% 0.062W
3106	4822 051 30101	100Ω 5% 0.062W
3107	4822 051 30101	100Ω 5% 0.062W
3108	4822 051 30101	100Ω 5% 0.062W
3109	4822 051 30472	4k7 5% 0.062W
3110	4822 051 30109	10Ω 5% 0.062W
3111	4822 051 30105	1M 5% 0.062W
3112	4822 051 30221	220Ω 5% 0.062W
3113	4822 051 30472	4k7 5% 0.062W
3114	4822 051 30472	4k7 5% 0.062W
3115	4822 051 30472	4k7 5% 0.062W
3116	4822 051 30472	4k7 5% 0.062W
3117	4822 051 30472	4k7 5% 0.062W
3118	4822 051 30472	4k7 5% 0.062W
3119	4822 051 30472	4k7 5% 0.062W
3120	4822 051 30479	47Ω 5% 0.062W
3123	4822 051 30479	47Ω 5% 0.062W
3124	4822 051 30332	3k3 5% 0.062W
3125	4822 051 30332	3k3 5% 0.062W
3126	4822 051 30332	3k3 5% 0.062W
3128	4822 051 30332	3k3 5% 0.062W
3130	4822 051 30479	47Ω 5% 0.062W
3200	4822 051 30479	47Ω 5% 0.062W
3201	4822 051 30103	10k 5% 0.062W
3202	4822 051 30272	2k7 5% 0.062W
3203	4822 051 30272	2k7 5% 0.062W
3300	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3301	5322 117 13033	15k 1% 0.063W 0603 RC22H
3302	5322 117 13028	12k 1% 0.063W 0603 RC22H
3304	4822 051 30339	33Ω 5% 0.062W
3305	4822 051 30339	33Ω 5% 0.062W
3306	4822 051 30339	33Ω 5% 0.062W
3307	4822 051 30339	33Ω 5% 0.062W
3308	4822 051 30339	33Ω 5% 0.062W
3309	4822 051 30339	33Ω 5% 0.062W
3310	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3311	5322 117 13033	15k 1% 0.063W 0603 RC22H
3312	5322 117 13028	12k 1% 0.063W 0603 RC22H
3314	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3315	5322 117 13033	15k 1% 0.063W 0603 RC22H
3316	5322 117 13028	12k 1% 0.063W 0603 RC22H
3318	5322 117 13033	15k 1% 0.063W 0603 RC22H
3319	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3320	5322 117 13028	12k 1% 0.063W 0603 RC22H
3322	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3323	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3324	5322 117 13033	15k 1% 0.063W 0603 RC22H
3325	5322 117 13028	12k 1% 0.063W 0603 RC22H
3326	5322 117 13028	12k 1% 0.063W 0603 RC22H
3327	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3328	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3329	5322 117 13033	15k 1% 0.063W 0603 RC22H
3330	5322 117 13028	12k 1% 0.063W 0603 RC22H
3331	5322 117 13028	12k 1% 0.063W 0603 RC22H
3332	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3333	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3334	5322 117 13033	15k 1% 0.063W 0603 RC22H
3335	5322 117 13028	12k 1% 0.063W 0603 RC22H
3336	5322 117 13028	12k 1% 0.063W 0603 RC22H
3337	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3338	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3339	5322 117 13033	15k 1% 0.063W 0603 RC22H
3340	5322 117 13028	12k 1% 0.063W 0603 RC22H
3341	5322 117 13028	12k 1% 0.063W 0603 RC22H
3342	4822 117 12706	10k 1% 0.063W CASE0603 RC22H

3343	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3344	5322 117 13033	15k 1% 0.063W 0603 RC22H
3345	5322 117 13028	12k 1% 0.063W 0603 RC22H
3346	5322 117 13028	12k 1% 0.063W 0603 RC22H
3347	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3348	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3349	5322 117 13033	15k 1% 0.063W 0603 RC22H
3350	5322 117 13028	12k 1% 0.063W 0603 RC22H
3351	5322 117 13028	12k 1% 0.063W 0603 RC22H
3352	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3353	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3354	5322 117 13033	15k 1% 0.063W 0603 RC22H
3355	5322 117 13028	12k 1% 0.063W 0603 RC22H
3356	5322 117 13028	12k 1% 0.063W 0603 RC22H
3357	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3358	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3359	5322 117 13033	15k 1% 0.063W 0603 RC22H
3360	4822 051 30221	220Ω 5% 0.062W
3361	4822 051 30561	560Ω 5% 0.062W
3362	4822 117 12925	47k 1% 0.063W 0603
3363	4822 051 30221	220Ω 5% 0.062W
3364	4822 051 30561	560Ω 5% 0.062W
3365	4822 051 30103	10k 5% 0.062W
3366	4822 051 30103	10k 5% 0.062W
3367	4822 117 12925	47k 1% 0.063W 0603
3368	5322 117 13028	12k 1% 0.063W 0603 RC22H
3369	5322 117 13028	12k 1% 0.063W 0603 RC22H
3370	4822 051 30221	220Ω 5% 0.062W
3371	4822 051 30561	560Ω 5% 0.062W
3372	4822 051 30472	4k7 5% 0.062W
3373	4822 051 30221	220Ω 5% 0.062W
3374	4822 051 30561	560Ω 5% 0.062W
3375	4822 051 30103	10k 5% 0.062W
3376	4822 051 30103	10k 5% 0.062W
3377	4822 051 30332	3k3 5% 0.062W
3378	4822 051 30221	220Ω 5% 0.062W
3380	4822 051 30561	560Ω 5% 0.062W
3381	4822 051 30221	220Ω 5% 0.062W
3382	4822 051 30561	560Ω 5% 0.062W
3383	4822 051 30103	10k 5% 0.062W
3384	4822 051 30103	10k 5% 0.062W
3385	4822 051 30472	4k7 5% 0.062W
3386	4822 051 30221	220Ω 5% 0.062W
3387	4822 051 30561	560Ω 5% 0.062W
3388	4822 051 30103	10k 5% 0.062W
3389	4822 051 30221	220Ω 5% 0.062W
3390	4822 051 30561	560Ω 5% 0.062W
3391	4822 051 30103	10k 5% 0.062W
3392	4822 051 30103	10k 5% 0.062W
3394	4822 051 30101	100Ω 5% 0.062W
3395	4822 051 30103	10k 5% 0.062W
3400	4822 051 30101	100Ω 5% 0.062W
3401	4822 051 30101	100Ω 5% 0.062W
3402	4822 051 30101	100Ω 5% 0.062W
3403	4822 051 30569	56Ω 5% 0.062W
3404	4822 051 30569	56Ω 5% 0.062W
3405	4822 051 30569	56Ω 5% 0.062W
3406	4822 051 30222	2k2 5% 0.062W
3407	4822 117 13501	82Ω 5% 0.62W 0603
3408	4822 051 30222	2k2 5% 0.062W
3409	4822 051 30759	75Ω 5% 0.062W
3410	4822 051 30101	100Ω 5% 0.062W
3411	4822 051 30101	100Ω 5% 0.062W
3412	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3413	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3414	4822 051 30759	75Ω 5% 0.062W
3415	4822 051 30222	2k2 5% 0.062W
3416	4822 051 30759	75Ω 5% 0.062W
3417	4822 051 30222	2k2 5% 0.062W
3418	4822 051 30222	2k2 5% 0.062W
3419	4822 051 30759	75Ω 5% 0.062W
3420	4822 051 30101	100Ω 5% 0.062W
3421	4822 051 30569	56Ω 5% 0.062W
3422	4822 051 30759	75Ω 5% 0.062W
3423	4822 051 30222	2k2 5% 0.062W
3430	4822 051 30103	10k 5% 0.062W
3431	4822 051 30332	3k3 5% 0.062W
3440	4822 051 30103	10k 5% 0.062W
3441	4822 051 30183	18k 5% 0.062W
3442	4822 051 30223	22k 5% 0.062W
3443	4822 051 30153	15k 5% 0.062W
3444	4822 051 30471	470Ω 5% 0.062W
3445	4822 051 30221	220Ω 5% 0.062W
3446	4822 051 30103	10k 5% 0.062W
3447	4822 051 30103	10k 5% 0.062W
3448	4822 051 30103	10k 5% 0.062W
3449	4822 051 30183	18k 5% 0.062W
3450	4822 051 30222	2k2 5% 0.062W
3451	4822 051 30223	22k 5% 0.062W
3452	4822 117 12902	8k2 1% 0.063W 0603
3453	4822 051 30101	100Ω 5% 0.062W
3454	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3455	4822 051 30222	2k2 5% 0.062W
3456	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3457	4822 051 30101	100Ω 5% 0.062W
3458	4822 051 30101	100Ω 5% 0.062W
3459	4822 051 30222	2k2 5% 0.062W
3460	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3461	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3462	4822 051 30222	2k2 5% 0.062W
3463	4822 051 30101	100Ω 5% 0.062W
3464	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3465	4822 051 30222	2k2 5% 0.062W
3466	4822 051 30101	100Ω 5% 0.062W
3467	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3468	4822 051 30222	2k2 5% 0.062W
3469	4822 051 30101	100Ω 5% 0.062W
3470	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3471	4822 051 30222	2k2 5% 0.062W
3472	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3473	4822 051 30101	100Ω 5% 0.062W
3474	4822 051 30101	100Ω 5% 0.062W
3491	4822 117 11151	1Ω 5%
3492	4822 117 11151	1Ω 5%
3493	4822 117 11151	1Ω 5%
3495	4822 117 11151	1Ω 5%
3496	4822 051 30472	4k7 5% 0.062W
3497	4822 117 12903	1k8 1% 0.063W 0603

5400	2422 535 94092	IND FXD SM 0805 33U PM10 R
5401	2422 535 94092	IND FXD SM 0805 33U PM10 R
5402	2422 535 94092	IND FXD SM 0805 33U PM10 R
5403	4822 157 11074	100µH
5413	4822 157 70601	100µH (920927085A)

6302	4822 130 11397	BAS316
6304	4822 130 11397	BAS316
6400	4822 130 11087	BZX284-C15
6401	4822 130 11087	BZX284-C15
6402	4822 130 11087	BZX284-C15

7100	9965 000 06673	TC7WHU04FU
7101	9965 000 06673	TC7WHU04FU
7103	9352 499 60118	IC SM 74LVC00AD (PHSE) R
7104	5322 209 11578	PCF8574T
7122	9965 000 04199	BSN20
7124	9965 000 04199	BSN20
7200	9322 177 92671	IC SM CS4362-KQ (CILO) Y
7201	5322 209 14481	HEF4053BT
7202	4822 209 30095	LM833D
7203	4822 209 30095	LM833D
7220	4822 130 42804	BC817-25
7300	9352 202 10118	IC SM NE5532AD8 (PHSE) R
7301	9352 202 10118	IC SM NE5532AD8 (PHSE) R
7302	9352 202 10118	IC SM NE5532AD8 (PHSE) R
7321	4822 130 42804	BC817-25
7323	4822 130 42804	BC817-25
7325	4822 130 42804	BC817-25
7327	4822 130 42804	BC817-25
7329	4822 130 42804	BC817-25
7331	4822 130 42804	BC817-25
7333	4822 130 42804	BC817-25
7335	4822 130 42804	BC817-25
7336	5322 130 60159	BC846B
7337	4822 130 60373	BC856B
7338	4822 130 60373	BC856B
7341	4822 130 60373	BC856B
7401	4822 209 17398	LD1117DT33
7403	4822 209 82112	MC7908CT
7420	5322 130 60159	BC846B
7421	5322 130 60159	BC846B
7422	5322 130 60159	BC846B
7423	5322 130 60159	BC846B
7424	5322 130 60159	BC846B
7425	5322 130 60159	BC846B
7430	5322 130 60159	BC846B
7431	5322 130 60159	BC846B
7432	5322 130 60159	BC846B
7433	5322 130 60159	BC846B
7434	5322 130 60159	BC846B
7435	5322 130 60159	BC846B
7436	5322 130 60159	BC846B
7437	5322 130 60159	BC846B
7440	5322 130 60159	BC846B
7441	5322 130 60159	BC846B
7442	5322 130 60159	BC846B
7443	9322 163 53685	FET POW SM IRLML2502 (INR0) R
7445	4822 209 33083	L7808CV
7446	4822 209 80817	L7805CV
7604	9322 155 28667	OPT FIB CON GP1FA550TZ (SRPJ)L

Front PWB

Various

1100	3139 240 50211	FTD 11-MT-130GNK DVD LEAD2002
1109	4822 276 13775	SWITCH
1113	4822 276 13775	SWITCH
1118	4822 276 13775	SWITCH
1119	4822 276 13775	SWITCH
1120	4822 276 13775	SWITCH
1121	4822 276 13775	SWITCH
1122	4822 276 13775	SWITCH
1123	4822 276 13775	SWITCH
1125	4822 276 13775	SWITCH
1127	2422 025 17479	CON BM H 8P M 2.50 MIS B
1128	2422 540 98518	RES CER 8MHz CSTS*MHz 03 A
1130	2422 527 01005	BUZZER PIEZO PKM13EPY-4002 Y
1131	4822 267 10567	4P
1132	2422 128 03034	SWI TACT NAV 1P 4POS SKQUAA R
1200	4822 267 10567	4P
1201	4822 276 13775	SWITCH

2100	4822 126 13883	220pF 5% 50V
2101	4822 126 13883	220pF 5% 50V
2102	4822 126 14549	33nF 16V O6O3
2104	3198 024 44730	47nF 50V 0603
2106	4822 124 41643	100µF 20% 16V DIM:6.3X11MM
2111	3198 028 52290	22µF 20% 50V
2112	4822 126 14549	33nF 16V O6O3
2113	4822 124 12032	4.7µF 20% 50V
2114	5322 126 11578	1nF 10% 50V 0603
2115	4822 126 14549	33nF 16V O6O3
2116	5322 126 11578	1nF 10% 50V 0603
2117	4822 126 14549	33nF 16V O6O3
2118	4822 124 81286	47µF 20% 16V
2119	3198 028 42290	EL 5MM 35V 22µF PM20 COL A
2120	4822 122 33761	22pF 5% 50V
2121	4822 122 33761	22pF 5% 50V
2122	4822 126 14549	33nF 16V O6O3
2123	4822 124 11947	10µF 20% 16V
2124	4822 122 33761	22pF 5% 50V
2125	3198 028 42290	EL 5MM 35V 22µF PM20 COL A

3100	4822 117 13608	4.7Ω 5% 0603 0.0016W
3101	4822 051 30472	4k7 5% 0.062W
3102	4822 117 13613	2Ω2 5% 0603
3103	4822 117 13608	4.7Ω 5% 0603 0.0016W
3104	4822 117 13613	2Ω2 5% 0603
3105	4822 051 30223	22k 5% 0.062W
3106	4822 051 30273	27k 5% 0.062W
3107	4822 117 12925	47k 1% 0.063W 0603
3108	4822 117 13632	100k 1% 0603 0.62W
3109	4822 051 30221	220Ω 5% 0.062W

3110	4822 051 30472	4k7 5% 0.062W
3112	4822 051 30472	4k7 5% 0.062W
3113	4822 051 30472	4k7 5% 0.062W
3114	4822 051 30472	4k7 5% 0.062W
3115	4822 051 30472	4k7 5% 0.062W
3116	4822 051 30472	4k7 5% 0.062W
3117	4822 051 30472	4k7 5% 0.062W
3118	4822 051 30103	10k 5% 0.062W
3119	4822 051 30103	10k 5% 0.062W
3120	4822 117 11152	4Ω7 5%
3121	4822 051 30109	10Ω 5% 0.062W
3122	4822 051 30103	10k 5% 0.062W
3123	4822 051 30101	100Ω 5% 0.062W
3124	4822 051 30101	100Ω 5% 0.062W
3125	4822 051 30109	10Ω 5% 0.062W
3126	4822 051 30472	4k7 5% 0.062W
3127	4822 051 30109	10Ω 5% 0.062W
3128	4822 051 30109	10Ω 5% 0.062W
3129	4822 051 30102	1k 5% 0.062W
3130	4822 051 30103	10k 5% 0.062W
3131	4822 051 30331	330Ω 5% 0.062W
3132	4822 051 30331	330Ω 5% 0.062W
3133	4822 051 30103	10k 5% 0.062W
3134	4822 051 30221	220Ω 5% 0.062W
3135	4822 051 30331	330Ω 5% 0.062W
3136	4822 051 30103	10k 5% 0.062W
3137	4822 117 11152	4Ω7 5%
3138	4822 051 30471	470Ω 5% 0.062W
3139	4822 051 30472	4k7 5% 0.062W
3140	4822 051 30109	10Ω 5% 0.062W
3141	4822 051 30103	10k 5% 0.062W
3142	4822 051 30471	470Ω 5% 0.062W
3143	4822 117 11152	4Ω7 5%
3145	4822 051 30472	4k7 5% 0.062W
3200	4822 051 30101	100Ω 5% 0.062W

6100	4822 130 11397	BAS316
6101	9965 000 04709	UDZ6.2BTE-17
6102	4822 130 11397	BAS316
6103	4822 130 11397	BAS316
6200	4822 130 82978	LTL-16KPE-P

7100	5322 130 60159	BC846B
7101	3139 240 50221	TMP87CH74F-3NB2 DVDV2.21
7102	5322 130 60159	BC846B
7103	4822 130 40981	BC337-25
7104	9322 155 82667	IR RECEIVER TSOP2236
7105	4822 130 60373	BC856B
7106	4822 130 40854	BC327
7107	5322 130 60159	BC846B

SCART PWB

Various

1000	2422 025 12352	CON BM EURO H 21P F BK GRND-L
1001	2422 025 12352	CON BM EURO H 21P F BK GRND-L
1300	2422 025 16526	CON BM V 22P F 1.00 FFC 0.3 R

2100	4822 124 11947	10µF 20% 16V
2101	4822 124 40207	100µF 20% 25V
2102	4822 126 14305	100nF 10% 16V 0603
2103	4822 126 14305	100nF 10% 16V 0603
2104	4822 126 14305	100nF 10% 16V 0603
2105	4822 122 33777	47pF 5% 63V
2106	4822 122 33777	47pF 5% 63V
2107	4822 126 14305	100nF 10% 16V 0603
2108	4822 126 14305	100nF 10% 16V 0603
2109	4822 126 14305	100nF 10% 16V 0603
2110	4822 124 41584	100µF 20% 10V
2111	4822 126 14494	22nF 10% 25V 0603
2112	4822 126 14305	100nF 10% 16V 0603
2113	4822 126 14305	100nF 10% 16V 0603
2114	3198 017 44740	0603 10V 470nF COL
2115	3198 017 44740	0603 10V 470nF COL
2116	3198 017 44740	0603 10V 470nF COL
2117	4822 124 11947	10µF 20% 16V
2118	4822 124 11947	10µF 20% 16V
2119	4822 124 21732	10µF 20% 25V
2120	3198 017 44740	0603 10V 470nF COL
2121	4822 124 40207	100µF 20% 25V
2122	4822 126 14305	100nF 10% 16V 0603
2200	4822 124 12032	4.7µF 20% 50V
2201	4822 126 13883	220pF 5% 50V
2202	4822 124 12032	4.7µF 20% 50V
2203	4822 124 12032	4.7µF 20% 50V
2204	4822 124 12032	4.7µF 20% 50V
2205	4822 122 31765	100pF 2% 63V 1206
2206	4822 126 13883	220pF 5% 50V
2207	4822 126 13883	220pF 5% 50V
2208	4822 126 13883	220pF 5% 50V
2209	4822 126 13883	220pF 5% 50V
2210	4822 126 13883	220pF 5% 50V
2211	4822 124 21732	10µF 20% 25V
2212	4822 124 12032	4.7µF 20% 50V
2213	4822 124 12032	4.7µF 20% 50V
2214	4822 124 12032	4.7µF 20% 50V
2215	4822 124 12032	4.7µF 20% 50V
2216	4822 126 13883	220pF 5% 50V
2217	4822 126 13883	220pF 5% 50V
2218	4822 122 31765	100pF 2% 63V 1206
2219	4822 124 11947	10µF 20% 16V
2220	4822 126 13883	220pF 5% 50V
2221	4822 124 11947	10µF 20% 16V
2222	4822 126 13883	220pF 5% 50V
2223	4822 126 13883	220pF 5% 50V
2224	4822 126 13883	220pF 5% 50V
2225	4822 124 21732	10µF 20% 25V
2226	4822 126 13883	220pF 5% 50V

3100	4822 117 11152	4Ω7 5%
3102	4822 051 30103	10k 5% 0.062W
3104	4822 051 30472	4k7 5% 0.062W
3105	4822 051 30103	10k 5% 0.062W
3106	4822 051 30103	10k 5% 0.062W
3107	4822 051 30101	100Ω 5% 0.062W
3108	4822 051 30101	100Ω 5% 0.062W
3109	4822 051 30472	4k7 5% 0.062W
3110	4822 051 30103	10k 5% 0.062W
3111	4822 051 30102	1k 5% 0.062W
3112	4822 051 30472	4k7 5% 0.062W
3113	4822 051 30103	10k 5% 0.062W
3114	4822 051 30471	470Ω 5% 0.062W
3115	4822 051 30471	470Ω 5% 0.062W
3116	4822 051 30103	10k 5% 0.062W
3117	4822 051 30472	4k7 5% 0.062W
3200	4822 051 30221	220Ω 5% 0.062W
3201	4822 117 12925	47k 1% 0.063W 0603
3202	4822 051 30471	470Ω 5% 0.062W
3203	4822 051 30273	27k 5% 0.062W
3204	4822 117 12925	47k 1% 0.063W 0603
3205	4822 051 30221	220Ω 5% 0.062W
3206	4822 117 12925	47k 1% 0.063W 0603
3207	4822 051 30273	27k 5% 0.062W
3208	4822 117 12925	47k 1% 0.063W 0603
3209	4822 051 30471	470Ω 5% 0.062W
3210	4822 051 30471	470Ω 5% 0.062W
3211	4822 051 30101	100Ω 5% 0.062W
3212	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3213	4822 051 30471	470Ω 5% 0.062W
3214	4822 051 30471	470Ω 5% 0.062W
3215	4822 051 30101	100Ω 5% 0.062W
3216	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3217	4822 051 30151	150Ω 5% 0.062W
3218	4822 051 30101	100Ω 5% 0.062W
3219	4822 051 30472	4k7 5% 0.062W
3220	4822 051 30472	4k7 5% 0.062W
3221	4822 051 30472	4k7 5% 0.062W
3222	4822 117 13632	100k 1% 0603 0.62W
3223	4822 051 30471	470Ω 5% 0.062W
3224	4822 051 30151	150Ω 5% 0.062W
3225	4822 051 30471	470Ω 5% 0.062W
3226	4822 051 30472	4k7 5% 0.062W
3227	4822 051 30471	470Ω 5% 0.062W
3228	4822 051 30222	2k2 5% 0.062W
3229	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3230	4822 051 30759	75Ω 5% 0.062W
3231	4822 051 30561	560Ω 5% 0.062W
3232	4822 051 30101	100Ω 5% 0.062W
3233	4822 051 30471	470Ω 5% 0.062W
3234	4822 051 30339	33Ω 5% 0.062W
3235	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3236	4822 051 30472	4k7 5% 0.062W
3237	4822 051 30562	5k6 5% 0.063W 0603 RC21 RST SM
3238	4822 051 30479	47Ω 5% 0.062W
3239	4822 051 30472	4k7 5% 0.062W
3240	4822 051 30102	1k 5% 0.062W
3241	4822 117 12925	47k 1% 0.063W 0603
3242	4822 051 30471	470Ω 5% 0.062W
3243	4822 117 12925	47k 1% 0.063W 0603
3244	4822 051 30272	2k7 5% 0.062W
3245	4822 051 30102	1k 5% 0.062W
3246	4822 117 12925	47k 1% 0.063W 0603
3247	4822 051 30471	470Ω 5% 0.062W
3248	4822 117 12925	47k 1% 0.063W 0603
3249	4822 051 30102	1k 5% 0.062W
3250	4822 117 12925	47k 1% 0.063W 0603
3251	4822 051 30471	470Ω 5% 0.062W
3252	4822 051 30471	470Ω 5% 0.062W
3253	4822 051 30472	4k7 5% 0.062W
3254	4822 051 30759	75Ω 5% 0.062W
3255	4822 051 30472	4k7 5% 0.062W
3257	4822 051 30759	75Ω 5% 0.062W
3258	4822 051 30471	470Ω 5% 0.062W
3259	4822 051 30339	33Ω 5% 0.062W
3260	4822 051 30561	560Ω 5% 0.062W
3261	4822 051 30472	4k7 5% 0.062W
3262	4822 051 30759	75Ω 5% 0.062W
3263	4822 051 30472	4k7 5% 0.062W
3264	4822 051 30479	47Ω 5% 0.062W
3266	4822 051 30759	75Ω 5% 0.062W
3267	4822 051 30472	4k7 5% 0.062W
3268	4822 051 30101	100Ω 5% 0.062W
3269	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3270	4822 051 30471	470Ω 5% 0.062W
3271	4822 051 30759	75Ω 5% 0.062W
3272	4822 051 30273	27k 5% 0.062W
3273	4822 117 12925	47k 1% 0.063W 0603
3275	4822 051 30272	2k7 5% 0.062W
3276	4822 051 30472	4k7 5% 0.062W
3277	4822 051 30561	560Ω 5% 0.062W
3278	4822 051 30561	560Ω 5% 0.062W

6208	9340 548 63115	PDZ15B

7102	4822 130 60511	BC847B
7103	4822 130 60511	BC847B
7104	4822 130 60511	BC847B
7105	4822 130 60511	BC847B
7106	4822 130 40854	BC327
7200	4822 130 42804	BC817-25
7201	4822 130 42804	BC817-25
7202	4822 130 60511	BC847B
7203	4822 130 60511	BC847B
7204	4822 130 60511	BC847B
7205	4822 130 60373	BC856B
7206	4822 130 60511	BC847B
7207	4822 130 60511	BC847B
7208	4822 130 60511	BC847B
7209	4822 130 60511	BC847B
7210	4822 130 42804	BC817-25
7211	4822 130 42804	BC817-25
7212	4822 130 60511	BC847B
7213	4822 130 60373	BC856B
7214	4822 130 60511	BC847B
7215	4822 130 42804	BC817-25
7216	4822 130 42804	BC817-25
7217	4822 130 60511	BC847B
7218	4822 130 60511	BC847B
7219	4822 130 42804	BC817-25
7220	4822 130 42804	BC817-25
7500	9322 134 86668	LF80C
7501	9322 135 59671	STV6411AD